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Reflections and experiments upon the VACCINE VIRUS. *By* Dr. Isaac I. Van Voorhis, *Fishkill, May* 10th, 1811. *Surgeon in the army of the U. S.*

IT is a well known fact that the atmospheric air is a destroyer of the specific virus of the vaccine fluid: light is also said to be unfriendly to it; and heat and cold are said to be more injurious to it than either. Bryce, when speaking of diluting the vaccine virus, says, "that neither warm water, nor the steam of water should ever be used for dissolving or diluting the vaccine virus; for the peculiar quality of this infection seems to be of such a delicate nature, as to be very readily destroyed or rendered effete by exposure to what may be considered a very gentle degree of heat." (*Practical Observations*, 2nd edit. p. 106,)

It is more difficult to excite the cow-pock during the hot, than during the cold season. It has been asked, is this difficulty owing to the decomposition of the virus by heat? It is justly observed that we carry the infection in our waistcoat or breeches pocket, where it must be exposed to as high a degree of heat as that of a summer's day; yet it loses not its activity; and we cannot suppose that there is any thing "specific in solar heat to effect the decomposition of vaccine virus. The difficulty of exciting the disease in hot weather, has been viewed as arising more from a mechanical cause. The constant and copious discharge says Dr. Coxe, from the exhalent extremities of the arteries, preventing absorption, by washing away the small portion applied, may, perhaps, in part account for it. The

doctor thinks in some cases, either a general or local indisposition to receive the disease may exist; that the disease may sometimes be communicated in the hottest season. I think he also tells us that failures have happened in the warm season, when the virus was immediately transferred from one arm to the other, and asks, could the heat of the hottest summer's day have much effect in such a case? (*Med. Repos.*) But it is just to observe that such failures happen also in the cold season. The writer has in two instances inserted vaccine infection, fresh from the arm of a healthy child, into the arms of two or three others without success: yet another attempt succeeded.

Reflecting upon this subject, and being impressed that experiment is the best test of opinion, the writer made the following with the vaccine fluid.

First. December 17th 1810, I vaccinated a child of Mr. C—, four or five years old; made three punctures in one arm. The infection, which was recent, the same day had been exposed to the action of heat—the quill armed with the virus was put into a phial, afterwards well corked; this was immerged into a vessel of boiling water for fifteen minutes. 24th, examined the arm and found that the virus had failed.

Second. December 17th, I vaccinated another child of Mr. C—, aged two or three years; made two punctures in the same arm. The virus the night previous had been exposed to the action of cold—the quill coated with it was put into a phial, which was then corked and placed into a snowbank, and there left for ten hours. 24th, examined the arm and found the virus had failed.

Third. December 18th, I exposed a quill armed with fresh vaccine virus to the atmospheric air about forty-eight hours. With this infection I was also foiled in my attempt to communicate the disease.

These patients were afterwards successfully vaccinated with virus from the same source, so that there is little probability that peculiarity of constitution, or effete infection had any influence in the failures.

These experiments the writer has repeated but twice; the last time the infection was not exposed to the air more than twelve hours, and with this he succeeded; but the two other quills were exposed to heat and cold as before, and also failed as before. More such experiments with

the vaccine fluid are requisite to fairly settle the matter, than those of almost any other nature; for even the most recent virus not unfrequently fails in communicating the disease; the above few facts therefore cannot be considered conclusive. In experiments in general, there is always a possibility of fallacy; a regular series of facts, carefully conducted became therefore necessary to properly establish any fact whatever. And such trials of the vaccine fluid as are related above, repeated frequently, might fairly settle the matter relative to the effects of heat, cold, and atmospheric air upon the virus; and they are so simple and easy, that it is in the power of any practitioner to make them. And a due knowledge of the delicacy of that fluid which is to give security to the human constitution against so dreadful a disease as the small-pox, is necessary to every vaccinator.

The above experiments would seem to corroborate the opinion, that either extreme heat, or extreme cold applied a short time only, will destroy the specific property of the vaccine virus; and that any considerable exposure to the atmospheric air may have the same effect. And may we not reasonably conclude, that the action of both extremes of temperature are capable of decomposing the cow-pock infection, as well as of destroying other animal productions. That the heat of the human body does not destroy the specific virus of the cow-pock infection, may be owing in some measure to the gradual manner in which it is applied; and that degree of heat which is congenial to animal nature, is certainly not great enough to destroy animal productions. The vaccine virus is exposed to the heat of the body, as well as by inserting it in the arm, as by wearing it in the waistcoat pockets, and more suddenly. It is very well known that the human body will endure without injury a degree of heat when slowly applied, that would quite disorder, or disorganize it, if the application should be sudden. Indeed sudden transitions of a few degrees of temperature only, are often injurious to the human constitution; hence it is that alterations of temperature, or the sudden application of either extreme soon destroys vaccine infection.

The Hon. Ebenezer White of Westchester county related to the writer some time ago, a circumstance which tends to strengthen the opinion that any considerable de-

gree of culinary heat will even destroy the activity of variolous virus. In the earlier part of his practice he observed, when he was very busily engaged in inoculating for the small-pox, and in the habit of collecting the infection upon threads, that one time he coated over two threads with the infection, and in drying them by the fire, one dropped on the hot hearth. He inoculated seven or eight patients with the thread thus exposed to heat, out of which number but one or two were infected; the others being afterwards successfully inoculated with virus from the same pustule. With the other thread which was exposed to a gentle degree of heat only, he inoculated about fourteen patients, and the operation, as usual, took effect in them all. Add to this, what Hamilton affirms from experience, that frost is "absolute destruction to the variolous matter." "Frost has the effect of fire." *(Med. Repos.)*

Upon the whole, it appears rational to conclude, that either the application of any great degree of heat, or of cold, or a sudden alteration of these extremes of temperature, or even any considerable exposure to the atmospheric air, will destroy the specific virus of the vaccine fluid; that the system may in some measure be insusceptible of the vaccine impression during the hot season, either from cuticular exhalation, or from some indisposition to receive the virus in the absorbent system, or from a laxity, or some other unfavourable state of the nervous system, induced by solar heat; and that the difficulty in exciting the cow-pock during the hot weather, may be owing both to the effects of long continued heat on the virus, and on the system. And considering the delicacy of the vaccine fluid, which has been emphatically called the "aura vaccina," how much it becomes the duty of him who collects the virus, to be particularly mindful of the many cautions against exposing this tender fluid to any considerable degree of heat or cold: this will guard against failures from the operation, and consequently is among the means of exterminating that much talked of, multiformed monster, the "spurious cow-pox." How strong, how sacred is the duty of that physician, whose feelings are not seared with inhumanity, to be cautious against impressing a patient with a false confidence, by not imparting to the constitution the vaccine disease. In the language of Bryce, a prick of a thorn, or

the wound from a rusty nail may produce a sore arm as effectually as vaccine infection that has lost its specific virus; and such a sore arm may pass for the vaccine disease; and after it has proved inefficacious in preventing the small-pox, it may be *systematically* called a "*spurious disease!*"

The writer will now add a few experiments with the vaccine virus on brute animals. Dr. Valentin of Marseilles, who, for his services in promoting vaccination, received medallic honours from the French government, has discovered that the vaccine matter may be communicated from human beings, to she-asses, she-goats, sheep and dogs; and from these animals back to man again without losing its specific virus. (*Med. Rep.*) And the late Mr. Davy succeeded in inserting vaccine matter into the heel of a horse. (*See Ring.*) The writer has directed his attention to the horse, the cow, the cat, and the dog; but has succeeded in propagating the disease from the human subject only to the two former animals. No sooner was the infection inserted in the cat and the dog, than they fell to licking the part, which circumstance may perhaps account for the failure. I neglected to vaccinate in a part beyond the reach of their tongues. On February 10th 1809, I vaccinated my riding horse in the flank; this produced a pock nearly treble the size of the pustule in the human subject, but in other respects more characteristic of the vaccine vesicle preserving the several stages of the disease, being considerably swelled and inflamed about the tenth day. The scab may have dropped off rather sooner than it usually does in the human subject. The pock contained several large drops of limpid fluid; with this I transferred the disease to another horse, but failed in attempting to carry it back to the human species, though I made but two trials. The pock in the cow was much smaller, and would probably have been tolerably well characterized, had it not been partly rubbed off, which obscured its precise appearance.—From it no infection could be obtained.

An accurate description of that disease which Dr. Willan has called "PEMPHIGUS INFANTILIS." *Written by the mother of the patients that were the subjects of it, to her father. Communicated by Professor Benjamin Rush,* Philadelphia, February 25th 1812.

Fort Stoddert, M. T. July 6th 1810.

My Dear Father,

I WILL endeavour to comply as far as I can, with your request, to give you a written account of the illness and death of my two little girls.

Henrietta was born August 11th 1807. She was a small child, but to all appearance healthy: a day or two after her birth, I perceived on one of her cheeks a few red spots, like those occasioned by the bite of a flea; these were sometimes to be seen and sometimes not. Though she cried rather more than most children do, she did not appear to be the least unwell until she was about two weeks old; then she discovered great uneasiness whenever she attempted to suck, and sometimes would cry violently. I supposed she had the thrush, and not being able to raise her so as to be enabled to look into her mouth myself, I requested my sister to do so, who immediately told me Henrietta's mouth was very sore. I then frequently washed her mouth with cool water, and put loaf-sugar on her tongue, and used all such simple remedies as are commonly used for the thrush, but without effect. About this time, red spots, similar to what had been on her face, appeared on the joints of her fingers, her arms and her toes: in a short time these spots sunk in the centre, became sore, skinned, ran, and finally appeared like gashes or cuts festered, particularly the insides of her wrists and fingers: under her arms the gashes appeared first. The soals of her feet looked red and shining. The sores extended from her feet to her hips, from her finger ends to a little above her elbows, and from where the chin joins the neck to the bottom of her nose. She had one spot on her breast which never became sore: her head was not sore, but a vein on the back of it appeared remarkably large. Nearly all her nails came off. She never could bear from the time she was taken ill,

to lie straight; if she was lain so, she would immediately bend herself in the form of a bow; if we attempted when she was in our arms to keep her straight, she would scream most violently till she was permitted to bend herself.—In this posture she got all the sleep she had for five weeks, which I think was not more than an hour in twenty-four.

About ten days before her death, the thumb on her right hand appeared very much swelled; the first joint seemed to separate itself from the rest. We poulticed it for some days, but with little effect: one day while we were looking at it, considering what to do, a purple circle, about ¼ of an inch in circumference, suddenly formed on the broad part of the thumb, and at the same instant a hole about as big as a pin's head appeared in the centre of the circle, but I do not recollect that any thing was discharged from it. The night of the 29th September, she slept better than she had ever done before, but about 4 o'clock in the morning of the 30th, she waked both herself and me with the most dreadful screech I ever heard, she soon however fell asleep again. Until that morning her eyes had continued perfectly clear, then they sunk and seemed covered with matter, her right side became convulsed, and she continually struck her mouth with her right hand: at two o'clock she was cold to her hips, but she did not breath her last till sunset. During the day she cried faintly several times, and each time the skin of her lips cracked and bled. In the first part of her illness she was very costive, but afterwards quite the reverse. You gave her purgatives, the names of which I do not recollect, but I believe nothing seemed to have any effect. Two weeks before her death we attempted to give her some Rhubarb, but the smell of it affected her so sensibly, that she could not be forced to take it; she became pale, her eyes rolled, and for some time we thought she would not live till night. Her mouth was often dusted with peruvian bark, and her hands and legs moistened with sweet-oil: she was washed every day in cool water, and wore a thin linen shift and slip. She was a mere skeleton when she died.

Caroline was born October 18th 1809. She was a much larger and fatter child than Henrietta, and equally healthy in appearance. Soon after she was born, a rash common among children, broke out on her, but at the usual time disappeared. When she was about ten days old, two blis-

ters the size of a kidney bean, and near the shape of one, filled with matter, were discovered by my mother, each side of her navel; she opened them with her needle and wiped the matter off, and a few minutes after, it could not have been known where the blisters had been.

A few days after this, she slept nearly all day, which was very unusual, for she had till then cried a great deal and slept but little: the moment she opened her eyes, I thought I saw a change in them, nor was I deceived; she appeared to get sick from that time. Red spots similar to what had appeared on Henrietta, soon broke out under Caroline's toes; they did not continue red so long as those on her sister, but almost immediately filled with matter and then sunk in the centre; the spots on her feet were in this state before any broke out on her hands; the spots on her hands did not fill with matter like those on her feet, but appeared in every respect as the spots on Henrietta had appeared. The sores quickly spread, and when she died nearly all her body was covered with them. Several physicians besides yourself were called in to see Caroline. One only (Dr. Huston of the army) had before seen a child in a similar situation, who was cured by calomel, but it was ten years old, and my little girl was only three weeks old. Dr. Huston gave her a mixture of red coral, anniseed and laudanum: for awhile, this would afford her momentary relief, but it soon ceased to have much effect. She slept but little, and cried a great deal, and not so much I think, as her sister did. She frequently appeared to be striving to vomit, and would often throw thick phlegm off her stomach. Her mouth was very sore; we used borax, sugar, honey and butter, and bark. After trying more gentle remedies apparently with little effect, Dr. Huston and you, I believe, determined to try calomel; accordingly early in the morning of November 11th, the doctor gave her 1½ grains of calomel; a few hours after she had taken it, she seemed very sick and a little convulsed, after struggling violently to puke, and appearing almost choaked, she threw up a little phlegm: to enable her more easily to do this, I had bent her head a little downwards; when I raised it I perceived her eyes (which till now had been perfectly clear) covered with matter similar to that which had covered her sister's the day of her death. I supposed my child was

dying, nor had I any reason to hope otherwise till late in the afternoon, when the calomel produced a discharge from the bowels, and she seemed easier. She continued to take calomel in doses of $1\frac{1}{2}$ or 2 grains every other day; it no longer occasioned sickness or convulsions, and had a sensible, though gentle effect on her bowels. We had from the first of her illness moistened the sores with sweet oil, and dusted them with peruvian bark and magnesia, we had likewise given magnesia internally. The doctor now recommended a bark jacket, and you, I think, frequent use of the bark bath warm; we used both, and I took bark myself. As it seemed to hurt her very much to be dressed and undressed, and as we could never take her clothes off, without tearing some of the skin off with them, we merely wrapped her in soft flannel lined with linen. We about this time washed her sores in sulphur and oil mixed, particularly her forehead, which instead of breaking out in red spots or blotches, like the rest of her body, broke out in little white spots, about the size of a pin's head, and then ran into one sore. This mixture appeared to have a very good effect; indeed she seemed every way better; her fever which had been violent, left her; her sores were fast drying up; she had lost only two nails, and her hands were so well, there seemed no reason to apprehend she would lose more; her appetite was good, and she was apparently in little pain. The night of November the 23d, she sucked milk rather too fast, and to relieve herself she coughed: the cough was violent and Caroline was weak, I trembled for the consequences, but I soon became easy, for she seemed still better. She slept all night, and in the morning seemed so well that I prepared to take her about eight miles from home, to try what effect change of air would have on her; it was now nine o'clock; I was almost ready to start when I heard a lady who was with me, call my brother to go and see Caroline; I was with her in a moment; she was lying on her right side; a small stream of thick black blood was running out of her mouth. I took her up and bathed her in a warm bark bath. She seemed to revive, but she soon relapsed, and by twelve o'clock she had ceased to live.

Both these children were born apparently healthy. The eruption appeared on both, when they were about two weeks

old: it generally came first on or near the joints, and was always worse in such situations than in any other. They both kept the thumb pressed so hard on the two fore-fingers, particularly on the right hand, that it was difficult to raise it; and the constant pressure of the thumb on the fingers very much deformed all three. Both of them had high intermittent fevers. Caroline's left her several days before she died. I do not recollect that Henrietta's was ever entirely removed. They both become within eight days of their death very hoarse, till then they had cried quite clear and loud. Henrietta's nose was not at all affected; but Caroline's was so much so, that one nostril was for two weeks stopped up with a dark thick offensive matter; her ears too, though the skin did not appear broke, bled a great deal. Henrietta's ears were quite well. Caroline's were much in the same state with her sister's during her illness.

Twice when Caroline appeared in very great pain, and no physician was near to give her any thing, she seemed to receive great relief from an injection of sweet oil and molasses, in water rather more than milk warm, which I gave her twice, I think, each time. They both slept better the night immediately previous to their death than they had ever done before.

These, my dear father, are the most material circumstances respecting the illness and death of my children that I can now recollect: it may perhaps be well to say something of my own health previous to their birth, and while I gave them suck. 1807 was a very unhealthy year in this country; yet I almost entirely escaped the complaints of the country and of the seasons. I took but little exercise, and early in July, my feet, hands, and face began to swell; the swelling continued till it reached my hips, nor did it leave me till two weeks after my child was born, nor then, till I had taken medicine every other day for a week: by that time she was taken sick, and the fatigue of nursing prevented my recovering my health entirely, till sometime after her death. About three weeks before this event, I had the St. Anthony's fire, it continued, I think, ten days or perhaps longer. Not long after Henrietta was born, my mother and my youngest sister Emma, then an infant nine months old, were both taken very ill; my mother's milk soon dried up. Emma, who had to

suck a negro woman, still became worse, and two days before my child died she was not able to open her eyes; I that day began to suckle her, and continued to do so till January 27th, 1808. She began to recover almost immediately, and when I weaned her she was quite well, nor did she appear to experience any inconvenience from my milk. She is now, I believe, my father, even in your family, thought to be a remarkably large healthy child.

1809 was a healthy year, and I was as free from any complaint as any one in the country. Dr. Strong of this place advised me not to suckle my first child, but I did not like to follow his advice: he again advised me to get a wet nurse or Caroline. Doctor Huston joined him in that opinion; I accordingly got one, but she had not milk enough, and I was sometimes obliged to suckle her myself. She generally too, threw up the milk she sucked from the nurse.

Remarks on the means of restoring Suspended Animation, Communicated to the late Dr. EDWARD MILLER, *by* ALEXANDER H. STEVENS, *M. D. of New-York, dated London, February 29th,* 1812.

SIR,

IN large sea-port towns where accidents are constantly occurring, in which animation is suspended by submersion, hanging, breathing noxious gases, &c. it is a matter of great consequence that medical men and the community, should be familiar with the means best adapted to restore life. That the importance of this, has been highly appreciated, is evinced by the numerous treatises which have been written upon this subject, and the various plans that have been suggested.

It was for a long time supposed that in drowning, life was extinguished by the introduction of a large quantity of water into the stomach; and within a few years it was imagined that death was caused by the entrance of water into the lungs. These hypotheses gave rise to a practice not

yet entirely laid aside, of endeavouring to expel the water from the stomach or lungs by holding the patient up by the heels, or rolling him over an empty barrel. Sometimes he was laid supine across the back of a horse, which was then put upon a trot. This last method had the advantage of affording some degree of heat to the body; but it is probable that what other good any of these plans possessed, resulted entirely from the partial circulation of the blood which resulted from the motion, and more especially the elevation and depression of the thorax which was unconsciously thus induced.

Since it has been ascertained that submersion &c, arrests life, by putting a stop to that change which the blood should undergo in the lungs, these practices and theories have been generally rejected; and physicians have directed their attention to the discovery of the best mode of carrying on an artificial respiration until life is restored. To effect this purpose, and to rouse the dormant excitability of the system, constitute unquestionably the objects to be aimed at: each indication however, possessing a greater or less importance, as the lungs are considered to be more or less active in deoxydizing the air in their cells. They who hold that this deoxidization (or change whatever it be) is effected altogether by a vital process, direct their attention solely to the use of stimulants, until the lungs are excited into action enough to render useful the introduction of air into the bronchiæ. Others depend more upon the immediate re-establishment of respiration, without which stimulants can be of no service, according to their ideas, except in a few cases, where they may give power enough to the muscles to carry it on of themselves. Which of these practices is most correct, it may be worth while to inquire, when we are compelled to confine ourselves to either. But while both may be employed to their full extent, at the same time, without in the leasti nterfering with each other; such inquiry would be altogether useless, and if it lead us to a wrong conclusion, it would be worse than useless, it would be dangerous.

The most proper remedies to restore the excitability of the system, are sufficiently well understood and commonly practised. It is not my intention to dwell upon them in this paper. There is little danger of not doing what is right in this respect, if we do not neglect the means which

are simple and easy of application, by pursuing those which occasion a loss of time in their use. When galvanism and electricity were held up as the chief agents in the animal economy, these were recommended as proper to restore suspended animation; and more lately vital air or oxygen gas has been used for the same purpose. If animals were submersed purposely to test the efficacy of these remedies, there is reason to believe they would often prove successful. But it is clear that if they were to be applied to the accidents for which they have been recommended, ninetynine cases in a hundred would terminate fatally, before they could be used. Ardent spirits, heat, and friction are always at hand, and are in other respects probably more efficacious.

In addition to the use of these remedies, the great desideratum is to inflate the lungs. The inventors of the numerous instruments for this purpose seem, most unfortunately, to have vied with each other in rendering them costly, complex, and difficult to manage by those who are required to use them. It often happens in New-York that one of these instruments cannot be procured without a loss of much time, and even then, it cannot be applied until a physician arrives. How many cases terminate fatally in this way, which by proper means might have been successfully treated? In 1806, a man fell into Peck-Slip dock: he was taken up as nearly as I could judge, in five minutes, and carried into a house. Scarcely any thing was done but to tumble him about. A physician and machine were sent for. The machine was brought, but the doctor was not at home. After much further delay a bye-stander inflated the lungs—but life had flown forever.

It is well known to all who are acquainted with the structure of the human body, that air is made to enter the lungs by the removal or diminution of the pressure around them, while their internal cavities, by communicating with the atmosphere, are distended by its weight until an equilibrium takes place. This diminution of pressure arises from the contraction and consequent flattening of the diaphragm, whose convexity rises into the chest from below, and the synchronous elevation and turning out of the ribs. The first increasing the vertical dimensions of the thorax, and the latter, the anterior and lateral diameters.

Persons in health may respire enough by either of these means. After a hearty dinner the diaphragm does not assist much in breathing; while on the other hand, young ladies tightly laced, respire by its means alone; the elevation of the ribs being entirely prevented. In diseases, as inflammatory fever for example, or after exercise, the powers which move the ribs have a greater share in respiration than the diaphragm. To produce the necessary motions of the ribs in the dead subject is almost as much in the power of any person as to elevate his own, and they will as certainly determine the air to rush into the lungs. Scarcely any one has been engaged in dissection who must not have observed how easily he could move with his hands the ribs of a subject. To effect this most conveniently and completely as the patient or subject is laid on the table, and you are placed looking towards his feet, and leaning over his head, apply a hand on each side the chest so tightly as to move only with the thorax; then bring your hands toward your body: the ribs are elevated, the chest enlarged, and inspiration has taken place. The elasticity of the cartilages now induces an expulsion of the air, which may be still more completely effected by pressing down the ribs or abdomen. This process may be repeated and respiration thus carried on to any extent as completely and effectually as by the most complicated instruments. Is it possible to devise any means to answer this most important purpose more simple, intelligible and practicable than this? Any person may easily be made to comprehend, and taught to practise it. If it were to be substituted for the more laborious mode of inflating the lungs, I doubt not many lives would annually be saved which are now lost. It will be observed that it is equally applicable to all cases of suspended animation, whether they arise from submersion, hanging, breathing noxious air or other causes. In the last cases, a more extended application of remedies is necessary. But these may be used by any person until a physician arrives.

It is due to Astley Cooper, Esq. to state that he first suggested this plan several years ago, in his public lectures in St. Thomas' Hospital. It has been pursued by one of his former pupils, and also within a few days by myself with complete success. Going down the Thames last week in a boat, I observed a crowd of people collected on

the shore near the West India docks; and directed the waterman to row me to it. Soon after I landed, a man was taken up apparently drowned. He was carried to an alehouse, and his clothes being stript off, he was laid upon a table in the bar room. The table was previously covered with a blanket which was pressed and rubbed against every part of his body by the people around, while I alternately elevated or depressed the ribs in the mode I have mentioned. In a little while he drew a breath by his own power. He took a little hot gin toddy, which was by this time prepared for him, and gradually recovered. The bar maid was now just returned from the apothecary, and inquiring for a pair of bellows which he had directed to be in readiness against his arrival; when I came off, leaving the man able to articulate and move his limbs.

Observations and Practical Remarks on the nature, progress, and operations of the Venereal Disease. By Dr. FELIX PASCALIS, *of New-York.*

[Continued from page 240.]

IF to medical authority it essentially belongs to determine what are the best remedies for the cure or relief of diseases, the same is certainly to be relied on to discriminate and define their nature, because it is derived from a science founded upon the knowledge of natural causes. Hence we are obliged to mistrust exceptions or deviations from natural laws that are no longer mysterious, and to reject doubtful results or alleged facts which would remain inconsistent with medical philosophy.

With this guide before us, we are abundantly convinced that the operation of syphilis, notwithstanding its uniformly contagious and pernicious character, is diversified by age, seasons, and circumstances of contact. In enumerating indeed, in the first part of this essay, its various forms and combinations of symptoms, I have stated also the striking difference between the primary effects of *Venereal action*, and of those from *syphilitic constitutional disposition.* It has been shewn that the latter could not produce gonorrhœa, chancre, nor bubo, by sexual intercourse, although it is similar to the first in all the ultimate effects of its virulence.

For the further illustration of these principles, I applied them to the instance of a nurse, who being infected by a syphilitic infant, could not propagate the poison by connubial embraces: or in other words, who ought not to accuse an unfortunate nursling with a contamination which originated from previous or subsequent *Venereal action.*

The practical utility of a correct indication in this instance, and in others equally perplexing in the range of syphilitic affections, suggests the following division of cases, the true character of which is to be ascertained.

I. Of infants in any circumstance or anomaly of disease, and uncertainty of infection.

II. Of married persons, who experience spontaneous discharges and ulcerations in the parts of generation.

III. Of chronic and lymphatic diseases, in persons of either sex, who may have been exposed to impure contact.

IV. Of old sores and caries of bones, from prior and doubtful causes.

Harris, Sydenham, and Underwood, were of opinion that diseases of infants could be easily understood. *(vid. Underwood. diseases of children, page* 3, 4.*)* These eminent writers should have however restricted the assertion to that class of medical practitioners who are taught by experience to draw a line between the pathology of infants and that of adults; as many more are liable to commit great mistakes for want of exercising the power of discrimination; indeed, complaints which embrace all periods of life, operate in a different manner in infants, and especially Lues Venerea. However, it is incontrovertible that this disease, during the tender period of infancy, may be detected and ascertained, with less difficulty than in any other; firstly, because infants are susceptible of a less number of symptoms, before their tender frame sinks under the action of a devouring poison;* secondly, those symptoms rapidly aggravating, offer no kind of similarity, nor plausible motive for a misapprehension of any other disease.

That a few symptoms only of syphilis can be created in infants, result from their never receiving it by *Venereal action*, the primary effects of which are gonorrhœa, chancres, and bubo: and subsequent to these, phimosis, swelled tes-

* Dr. Doublet, phyſician of an hoſpital of Syphilitic infants in Paris, declares that all thoſe who were born with it, died almoſt unexceptionably, within a ſhort period of time. *(vide Swediaur.)*

ticles, warts, condylomata, &c. It cannot therefore exist in them, but constitutionally, whether congenite or produced by accidental contact. In either case, this virulent poison has seldom time to mature, and create those effects which are to be preceded by a long continuance in the system, such as lymphatic swellings of the periosteum, exostoses, nodes and caries, alopecia, &c. Infants that are known to be born infected, do not survive the short period of a few weeks. Their skin being frequently abraded on many parts of the body, proves a morbid state which *(vide Hunter, & B. Bell)* I do not recollect, has ever been in one single instance, counteracted by the most appropriate treatment. But if an infant is accidentally infected, before a material alteration takes place, to provoke an investigation, he is already in great danger of experiencing a fatal injury to his delicate organs and tender frame, owing to the immediate degeneracy of the lymphatic fluids, and of affection of the stomach and nerves, which we have already stated to be concomitant effects of constitutional syphilis. Infants cannot bear during any great length of time, an impaired or vitiated state of digestion. Enlightened physicians are apprised of the great difficulty to be encountered, from want of proper nourishment, in those unfortunate cases in which a syphilitic nurse is to be discarded, and a sound one should not be exposed, unless a simultaneous treatment is closely carried on; leaving to the nursling for dubious means of sustenance, paps, milk-bottles, or a dangerous breast; for if the treatment of either is not equally good and successful, re-infection must succeed to infection, and thus being frequently repeated, terminates by the destruction of weakest of the two.

Admitting therefore, that by the help of a vigorous constitution, and timely administration of remedies, infants might live a length of time with this constitutional disorder, I assert that it must manifest itself in that way which is natural, simple, obvious, and the most frequent in the first stage, that is by ulcerations in the mouth or in any other part of the body, by scurf, *(Furfura,)* blotches, and by pustules on the skin. Now if it is granted that in this exposition, no reference is made to hereditary anomalies, it remains for us to prove that these symptoms could not plausibly nor consistently be mistaken, or attributed to other infantile diseases.

Venereal ulcerations in infants accidentally infected, would be, like in adults, principally found in the parts first exposed to contact, *Et quâ parte contrahiter primo se manifestare solet;* yet owing to the extreme tenderness and mucosity of their skin, which in ordinary indispositions chafes and excoriates the folds of the neck, of the axillæ, groins and fundament, a constitutional virus probably may ulcerate those parts, forming in them deep corrosions, evidently circumscribed by indented and elevated edges. A syphilitic infant was once shewn to me with a venereal ulcer on the fundament, which in the short space of ten days had destroyed the sphincter ani, with the lateral parts of the nates, denuded the rectum, and following the raphe, had opened the perinæum and reached the scrotum! This is a remarkable circumstance that the virus of syphilis sooner corrodes cutaneous and muscular fibres, in infants, while in adults it is more readily fixed in the glands and lymphatic system, forming buboes or other clusters of suppuration.

As their most frequent mode of infection is by suckling, the virus then rapidly extends to all the internal organs of the mouth, and soon impedes its function, rarely by caries of the palate, by ozæna. I have seen it reaching through the eustachian tube, behind the nostrils, and the internal meatus auditorius. Having corroded the membrane of the tympanum, a purulent discharge carried off all the small bones, and a part of the labyrinth. Who in this horrid and impending ravages of syphilis, could allege or admit any resemblance to the symptoms of other infantile diseases?

The *Thrush*, aphthæ, a mild and sometimes tedious disease of the mouth, spreads like little white specks, running together more or less, and forming a white or brown crust, as far as the pharynx, but these *aphthæ* have not the character of ulceration.

Phlictenæ, or watery eruptions, pemphigus and pompholix; as soon as the ichor of their blebs is effused or absorbed, the raised cuticle collapses and heals, leaving nothing but red spots.—*Scrophulous* ulcerations in infants are very rare, and never form but on glands and bursæ mucosæ of the joints. Nor has their *Scald head*, the ulcerating *Herpes*, the least conformity with a venereal ulcer. The *Canker*, or gangrenous erosion of the cheek might probably be

mistaken for it, should we forget that this rare and dreadful complaint does not occur below the age of two years, and is always preceded by a long state of unhealthiness. *(vide Underwood.)*

Another primary symptom of constitutional syphilis in infants, is that of blotches and discolouration of the skin, which I have already stated to be a concomitant of confirmed lues in adults. In the first it assumes a bluish dark hue, and is attended with a certain degree of coldness hardly ascribable to any other disorder. Their blotches soon put off the scurf or crust, denudating purulent ulcers, while other milk blotches, for instance, are stationary and occasionally oozing sanies. As for syphilitic pustules, there are two kinds, the characters of which can be drawn from those of the benign and malignant small-pox. The one a full, round purulent vesicle with a contracted red areola; while the other is irregular, has a prominent apex, a ruddy aspect, and is encircled by a dark bluish suffusion. In adults, the last kind are few and scattered. The first are conglomerated, as it were in clusters, in several parts of the body. Both are more numerous in infants, and this is a particular effect of their tender constitution, that pustules never exist without affecting their stomach with constant vomiting, or their nerves with convulsions. The same poison, when existing in adults, must always have some point of action, unless by its confinement into the system, it racks the stomach, the head, and the bones by irritation and pain. I have seen it observed somewhere that the smallest possible chancre proves frequently a comfortable preventative against other pernicious effects, and uneasy feelings of syphilitic habit, until it is finally eradicated, as if its operation when concentrated in one point, was the best means of protecting the others.

None of the eruptions or cutaneous diseases of infants present pustules similar to those I have described. The accurate and ingenious Dr. Robert Willan, is the first who has nosologically arranged and classically defined them all; he mentions none which could in practice, in the least perplex our judgment. On the subject of *Psoriasis Infantilis*, he says "that it appears on the nates and about the anus. In the last situation it frequently suppurates, and in every respect, so much resembles venereal tubercles, that the most accurate eye can scarcely make a distinction. It is

no less difficult to distinguish the general appearance of the *Psoriasis Infantilis* from the scaly patches (blotches) which occur in infants, as secondary symptoms of lues venerea. The latter are generally accompanied with a sore throat, and a peculiar hoarse sound in the child's crying, which afflicts those who are attentive and experienced in forming a diagnosis. Though other criteria from external appearances, would in these cases be particularly desirable, I am sorry it is not in my power to establish such as are precise and satisfactory, I can only therefore recommend to practitioners, not to be too hasty in judging from such inspection, and never to decide till they are justified in so doing by collateral circumstances." *(Description and treatment of Cutaneous Diseases, by Robert Willan, M. D. order* 11, *page* 170.*)*

Infants are subject to an eruption of the wart kind, *(verrucæ.)* The same author has classed it under the name of *Vitiligo*, when white, and smooth tubercles appear to constitute it; and of *Acne*, stone-pock, when these are red. Of that very rare disease, I have observed two cases in the city of New-York, which it would not be irrelevant to describe, better to guard against unnecessary cause of alarm. The tubercles, whether red or pale, can be compared to flat warts; they are firm, although not absolutely hard, very irregular in size and in shape, and in the instance of the infant of Mr. H. H. they were very numerous, especially on the face; some on the lips being frequently irritated by saliva, were ulcerated. I remember they broke out all at once, and in consequence of warm and mucilaginous applications on the elbows of the infant, which had been discovered inflamed, swelled, and painful. I took at first that symptom for scrofula: but it was completely cured by the eruption. The mother who suckled the infant, was uncommonly healthy, and could not suspect any person, or child's nurse of having communicated this eruption, which never affected her nipples, lasted many months, and was afterwards radically cured by frequent doses of calomel. The other case I have in view, was likewise a healthy infant, from a sound mother. The complaint originated with a nurse, a poor woman who suckled two infants. As I objected to this, the infant was successively removed to several others, who pretended to have been injured in their nipples. From that circumstance I could not, however,

attribute the least specific acrimony to the infant, being aware of the many causes of sore nipples; the least of which are uncleanliness, improper diet, and too great pressure by the infant on that cavernous organ.

The eruption lasted seven or eight months and was never completely cured, until the infant was removed in the country. In this instance, tubercles had formed in the fundament, and one of them grown out to half an inch, presented the singularity of a few long and black hairs, larger than in the *Lichen pilaris*, described by Willan.—Swediaur, wishing to remove any unfounded impression of syphilitic taint in any case of excrescences on the fundament of infants, has formally mentioned, that these frequently occur from innocent causes. *(vide Swediaur.)*

(To be continued.)

Reasons for supposing that the Truffle is a native of the United States. In a letter from D. MITCHILL, *to* CASPAR W. EDDY, *M. D., dated Washington, March 31st,* 1812.

SOME years ago, I received from Dr. Sibley in North Carolina, a number of roundish masses, resembling yams. They were of a pure and delicate whiteness within, and covered with a brown or blackish skin. The impression I had at that time, was, that they were the roots of a plant called Tuckahoe. But I knew not what kind of vegetable, Tuckahoe was.

On further inquiry, I learned that the substances I possessed, were not roots, or if they were, they had neither radicles, buds, stems, leaves, or blossoms. This led me to examine them again, when I satisfied myself that they were *cryptogamous* productions, of the *Lycoperdon* family. In this state of mind, I remained until very lately, when I received another specimen, and a descriptive letter from Dr. Gray, of Jerusalem in Southampton county, Virginia. It is dated January 1st, 1812, and contains the following intelligence: "I have been withheld from answering the let-
"ter which I had the honour to receive from you some

"weeks ago, partly by my professional engagements, and "partly with a view of collecting more information con- "cerning the vegetable in question. In this I have been "disappointed. Every person of whom I inquired con- "cerning it, has given precisely the same account, corres- "ponding intirely with what I knew of it. I have seen it "taken out of the earth at various seasons of the year, but "oftenest in the spring, when it is presumed its foliage or "fructification, if it had any, would be visible. I have ex- "amined the external surface, and dissected it with a view "to discover if it ever had possessed a stalk or root; pre- "suming that I might be able to discover from the direc- "tion of the fibres of the bark, whether such things had "previously existed. But upon the most minute investiga- "tion, I have never been able to discover a vestige of ei- "ther. The bark is of a brownish ash-colour, sulcated, "and very much resembling in appearance, the root of the "Papaw-gum, a species of Nyssa. It is thin, but consider- "ably tough.

"The pulp, if it may be so called, is of a snowy white- "ness; and when newly dug up, soft, and abounding in a "somewhat acrid juice. In this state it is said to have "been used by the Indians, as a remedy in Diarrhœa.

"On being dried, it intirely loses its acrimony, and ac- "quires a bland, farinaceous, and slightly mucilaginous "taste. I have no doubt it might be made a very agreea- "ble and nutritious article of food. Its name induces one "to believe that it was used in this way by the aborigines; "the word *Tuche* or *Tuchai* signifying bread in several of "the dialects. I believe the Tuckahoe to class among the "cryptogamia. Its being intirely subterraneous, will be a "barrier to the discovery of its amours. It is my design "to transplant several into my garden, next spring with a "view to investigate them more fully; and more especially "to discover how far they may be applicable to culinary "purposes. Should it be discovered that they are capable "of considerable propagation, I have no doubt, they will "at some future time, be an important article of agricul- "ture.

"Hogs are extremely fond of them. They inhabit, for "the most part, a light rich soil; such as is best adapted to "the culture of maize. Though they are sometimes "found in soils of a different quality. They are frequent-

ly seen as large as a man's head, and proportionally heavy "when fresh; but lose a very great proportion of their "weight by drying."—

From this history, there can be no doubt that the Tuckahoe root is one of the *under ground funguses*. It seems indeed to be a species of *Truffle*, or *esculent mushroom*. In this point of view, it becomes quite an interesting object of research. To determine this, consider the character and qualities of the European Truffle.

Lycoperdon tuber.—The figure is nearly spherical, the size of a potatoe. The external coat at first white, afterwards black, and studded with pyramidal or polyedrous tubercles: the internal substance solid and callous, of a dirty white or pale brown colour, grained like a nutmeg, with serpentine lines; in which Micheli says, are imbedded capsules, containing seeds. In Great Britain they seldom exceed three or four ounces in weight; but in Italy and some other parts of the continent, they are said to have been found of the extraordinary weight of eight, and even fourteen pounds. They are served up for food either fresh and roasted like potatoes, or dried and sliced into ragouts.—Called in English, *Truffles*, or subterraneous puffballs, growing generally three or four inches under ground, without any visible root.

Having thus drawn the comparison between this American Truffle, and that of Europe, there is reason to believe although they belong to the same genus, there is nevertheless, a specific difference.

This difference I hope some of our enterprising botanists will soon explain, and give us every memorable particular concerning it, in an authentic and explicit form. And permit me to say, I expect much from you.

With sentiments of esteem,
I am, &c.
SAMUEL L. MITCHILL.

A few remarks and cautions in the Practice of Venesection.

IT is not intended here to advert to the accidental pricking of an artery or tendon, nor to the effects of any acrid

or poisonous matter adhering to a lancet, &c. These topics are too well known to practitioners to require or to suggest any novelty in point of observation. Nevertheless without relation to the above causes, a patient may experience an ulceration of the orifice; suppuration and a rapid inflammation of the arm. From Hunter's metaphysical but interesting views of the *ulcerative inflammation*, we understand that in case of a considerable ulcer from specific virus, the same may by absorption, be transported in any part where there is a new solution of continuity, or the tearing of muscular fibres. The idiopathic state of *suppurative inflammation*, is not so easily explained, but its existence is abundantly proved by all spontaneous cases of abscesses and phlegmasiæ. A vein being opened in either predisposition, its orifice has frequently degenerated into a bad ulcer, or the whole vein has inflamed, and rapidly marked the whole arm with fatal symptoms of mortification. Four cases in point and illustrative of those hints, may now be offered, as warnings to practitioners: yet what can be done, if the danger to be avoided, is a mystery; while the remedy resorted to, is evidently required?

I would propose that in two instances, cupping should be preferred to venesection, or that a particular care and appropriated dressing should be applied to the orifice. The first is that of any ulcer existing in the subject to be bled, and the other is an aggravated state of preternatural excitement in the circulating system, evinced by the pulse, by the colour, and previous habits of intemperance, &c.

1. A young gentleman had a large and schirrous ulcer on the groin, from a syphilitic cause, when from some circumstance, his physician thought proper to bleed him on the arm. No notice was taken of the orifice, when it was discovered to be ulcerated. It remained so nearly two months, in spite of every possible means that was employed to heal it up.—2. A middle-aged woman of a sound constitution, the mother of many children, was bled in the morning by a German bleeder, with a spring lancet; in the afternoon, the physician found the arm alarmingly inflamed, swelled, and echymosed. The orifice was too distant from the artery and tendon of the biceps, to make it probable that one or the other had been wounded. In a few hours, the colour of the parts became so livid and black in several points, interspersed with phlictenæ, that it was thought necessary to make four or five longitudinal incisions through

the cutis, from above and far below the elbow, to wrap up the whole limb with antiseptic poultices. These means arrested mortification, and the woman gradually recovered. —3. It is well known that Mr. Wignel, the manager of the theatre of Philadelphia, died in a few days from an inflamed vein of the arm. The vein was dissected after death, and found full of pus, presenting one only puncture, much less than its full diameter.—4. A case of inflamed vein from the operation of phlebotomy, ending in death, is related in the London, new Medical and Physical Journal, for December, 1811.

An account of the salutary effects, and beneficial influence of Marsh Miasmata in Pulmonary Diseases, with two remarkable cures at Ostend, of Hæmoptysis, and of consumption; in a letter communicated by the late Rev. Dr. Abeel, *to Professor* William Hamersley, *of this City and by the same, to the Editors.*

April 21, 1812.

Sir,

My absence has prevented me from sending such remarks as, I can do from experience in my own case, with respect to the curative effects of the marshy atmosphere of Ostend in Flanders, in affections of the lungs and spitting or vomiting blood. It would give me very great pleasure to offer any hint, which might stand a chance to be useful to Mr.——, or to any person connected with Col.——; but I must leave to the faculty to determine the nature of the case, and confine myself merely to my own case, and the situation of those consumptive persons, who were afterwards completely cured by taking my advice, and removing to Ostend.

I caught a violent cold and neglected it; a spitting of blood, and by degrees ordinary consumptive symptoms occurred. Dr. William Saunders was my physician. I followed his orders exactly: I then lived in London. I was removed to the country, and for six months, I lived on milk and vegetables. I tasted neither fish, nor flesh of any kind; nor wine, spirits, or beer. I took constant exercise in an open carriage, or on horse-back: still the consumptive symptoms attended with cough, hectic fever, spitting and vomiting of blood, rather seemed to increase than di-

minish. I was daily weaker and more emaciated. Bleeding or vomiting of blood, used to relieve me from the interior wheezing in my chest, and from the dimness of vision; but both, together or separately always would return.

Dr. Saunders advised me to travel about the country, by way of amusement and change of scene. With two friends, saddle-horses, and a phaeton, we viewed all the south west of England, very quietly and at our ease; having travelled about 1000 miles in six weeks. While at Plymouth, in the month of June, Dr. Mudge insisted on my wearing flannel next my skin, all over my body; this seemed to diminish the necessity of bleeding in the arm, to once in three days, in place of three times a week. He agreed with Dr. Saunders in every point, and both advised me to lose blood, (6 or 8 ounces) every time I perceived the dimness of sight to prevent the vomiting. Before that, I was sometimes forced to be bled four times a week. My cough was sometimes better; the spitting of matter and salt tasted globules was sometimes less; but the main disorder was in fact unabated. When I returned to my lodging in the country, near London, Dr. Saunders advised me to try the marshy foggy air of Ostend, for which he took the hint from a very old book, published by a Dr. Ker, who asserts that Ostend (in his time) never failed to cure consumptions.—I set out three days after my return from my jaunt in Devonshire, Somersetshire, Cornwall, &c. &c. and in driving towards Dover, vomited blood often out of the doors of the carriage. I was three days at sea in bad weather: I could hardly walk when I landed; I lived there on vegetables and milk, having acquired rather a dislike to any other food. From that time I felt no more dimness of sight, and was able to dispense with bleeding. I never applied more to physicians or surgeons. In eight or ten days I was so strong that I could hardly credit the rapid change myself. In this situation, Sir John Peter, the British consul induced me to live with him, and leave off my milk and bad water, to make use of Moselle, or small Rhenish wine at my meals. Nothing seemed now to hurt me; my appetite returned, my cough disappeared, with every symptom of spitting of blood. Chance made me now acquainted with the worthy Dr. Resolt, an excellent physician, living at Ostend. He assured me I was cured, and said he had never heard of any native of Ostend, that had been consumptive. In 3 weeks after my arrival, I sailed again

for London, and brought over my whole family, and since that time to this, almost 30 years, I have had no sort of complaint of that nature ; but I have followed with attention the advice of Dr. Saunders, Dr. Mudge, and Dr. Resolt, gave me, *never to keep a cold* 48 *hours* ; though few people take less care of themselves than I do ; but I never sit in wet clothes, or with wet feet ; and I prefer the floor to a damp bed, or damp sheets. I fear I have now gone into a tiresome detail, yet it may be satisfactory to Mr.——to know the particulars, to which I shall add, that I lived at Ostend near 7 years, during which time I had many opportunities of bringing persons there who were consumptive, and all were cured. Among the rest, one young lady I brought down from Brussels, with her mother, Lady Torrington. Georgiana Byng was then about 17 ; I had left her in good health some months before, when arriving at Brussels on business, I went to dine next day with Lady Torrington, and perceiving Georgiana was not at table, asked her father where she was, he touched my elbow, for if her mother heard it, she would leave the table. He soon afterwards told me she was at the point of death, not able to walk across her room, given over by the faculty and expected to live only a few days, her complaint a galloping consumption. I put him in mind of my own case, which he knew, but it had escaped him, and I added that since her physician and even her parents had no kind of hopes, I wished that they would give her to me ; he consented provided her mother was willing. My request was no sooner made to her after dinner than she expressed a strong desire to set out with me next morning, when I was to go at any rate, if I thought I could get her to my house alive ; in this I succeeded with much difficulty, but the eighth day after my arrival she took my arm and walked round the ramparts of the town without resting. The 21st day, she returned to her father's in perfect health, she afterwards married Lord John Russel, to whom she had several children before she died and had she lived she would now have been Dutchess of Bedford ; she never forgot that she was my adopted daughter and always called me Father. I have said enough to prove the quality of the air of Ostend in consumptive cases ; I wish I could say wherein this quality resides . but I will not pretend to what I do not know, nor venture to ascribe it to a larger quantity of azote and

hydrogen, than common air. My opinion is, that though the sea air may form a part of the Ostend Atmosphere, with certain winds, the chief part of it is combined with marsh Miasmata, which we know to be the chief cause and origin of intermitting fevers, and these are extremely troublesome at Ostend, but under the care of the good Dr. Resolt that much preferable evil to consumptions is easily cured. I am confident there are many situations in America equal to that of Ostend, and much resembling it. I have never been in the Vicinity of Norfolk in Virginia, but from accounts of others, I imagine positions may be found that way, or in some parts of the sea coasts of the Northern States, where the spring tides flow into marshes behind and renew at times the brackish stagnation water. Perhaps even the salt water may be the least part of necessary composition; a very marshy low situation may probably do equally as well. I cannot yet ascertain whether any consumptions exist on fausse Riviere, or even at point Coupe, but agues I am told are frequently there. At all events I do firmly believe that hot tea, an abuse of too warm liquid, bad lodgings where the night air is not excluded, damp beds &c. would create a consumption even at Ostend.

Yours Truly,

W. H.

An account of the mode of increasing the glare and intensity of light, practised by Capt. WINSLOW LEWIS, *and of the advantages which his method promises, to the Light-house establishment of the United States. In a letter from* SAMUEL L. MITCHILL *to* ROBERT R. LIVINGSTON, *LL. D. dated Washington City April* 4, 1812.

Captain Winslow Lewis obtained letters patent for the exclusive use of a certain apparatus of lamps, mirrors and lenses, to render light visible at greater distances, than it can be distinguished in the common way. He proposed to apply his invention to the improvement of the light houses which the government has fixed with a liberal endowment along our coast. They amount to fifty-five in number; and are computed to consume 50,000 gallons of

oil annually. The cost of this oil, with cooperage and transportation is estimated at $53,300 yearly.

The oil burned in these lanthorns is procured from the bodies of whales. And the government in using it so largely, has patronised in a corresponding degree, the whale-fishery in which our countrymen embark with such remarkable spirit.

In June 1810, the Collector of the port of Boston addressed a letter to the Secretary of the Treasury, informing him of the probability there was of improving the condition of mariners along the coast, by adding Lewis's improvements to the existing light house establishment. The two points of excellence were stated to be, the extrication and direction of a stronger light, and the obtaining of this object with a far less expenditure of oil.

It is sufficiently proved in the report of Captains Lee, Matchett and Smith, to the Boston Marine Society, that the brightness of one of the improved lights, during the night as much excels an ordinary light-house lamp, as a well trimmed Argand lamp surpasses a common candle. At two leagues and a half distance, their power was so great as to throw a strong shadow on the deck of a vessel. And all this is effected with scarcely, if any, more than one third of the oil commonly burned.

This information was so encouraging that orders were issued, for fitting up one of the light houses on Thacher's island, Cape Ann, upon the new plan: while the other was put into the best repair that the old method permitted. The lights seen from 3 to 7 leagues distance, were comparatively, as a large brilliant star contrasted with a very small one. And the expenditure of oil was as one to two, in favour of the improved mode.

The light may be stationary and fixed, or so disposed as to revolve circularly and horizontally, by means of clock work.

In April 1811, the Cape Cod and Boston light houses were directed to be fitted up in this improved manner. Messrs. Williams, Hopkins and Atkins speak in the most encouraging terms, of the brilliancy of the light. At four leagues distance, the Boston light, for magnitude and strength exceeded any thing their most sanguine expectation could have conceived. When at seven leagues distance the contrast between the new and the old lights was the

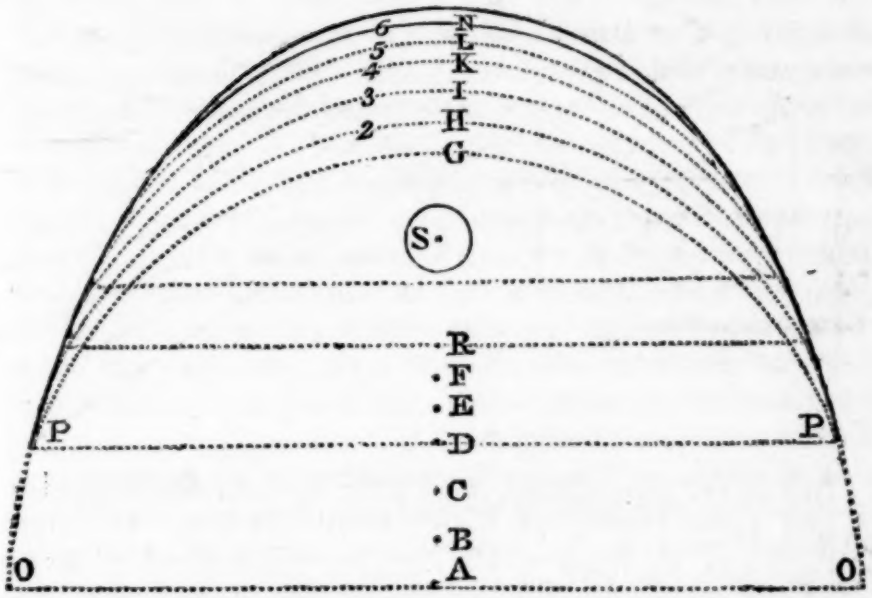
most plain and striking. They compare the difference between them to that between the visible appearance of the sun and moon. They state that they distinguished it brightly at ten leagues distance; and discerned it even when more than eleven leagues off. They think the former can be seen five leagues further than the latter. It emits a brilliant light to the greatest visible distance. While the Plymouth light was distinguishable only six leagues, and the Cape Cod light not more than two, the new and improved Boston light could be seen as before mentioned.

Many pilots, merchants and ship-masters, to the number of sixty and upwards have attested the splendour and steadiness of the new and reflected light, and expressed their belief that its adoption, would add much to the safety of life and property in navigation.

It is supposed that the illumination of the hemisphere, by arranging the lanterns of the light houses of the United States, upon Mr. L's plan, would not require more than 20,000 gallons of oil, which with the cooperage and transportation would amount to $21,530, And this sum deducted from the present cost of the establishment, would make a difference, in oil only, equal to $31,770 per annum. And for $32,654 a sum exceeding but in a trifling amount that which might be saved during a single twelve month in the article of oil, might all the present light houses of the nation be fitted up, upon this splendid and economical plan.

Such being the advantages proposed by the Patentee, I was curious to learn the construction of his mirrors. He gratified me by an experiment at the Capitol in the City of Washington. The material is copper plated internally with silver. The curve it forms is not a section of a sphere. It is rather a conic section, of the parabolic kind. The annexed Diagram (Fig. 1.) will show you the principle of its construction.

Fig. 1.

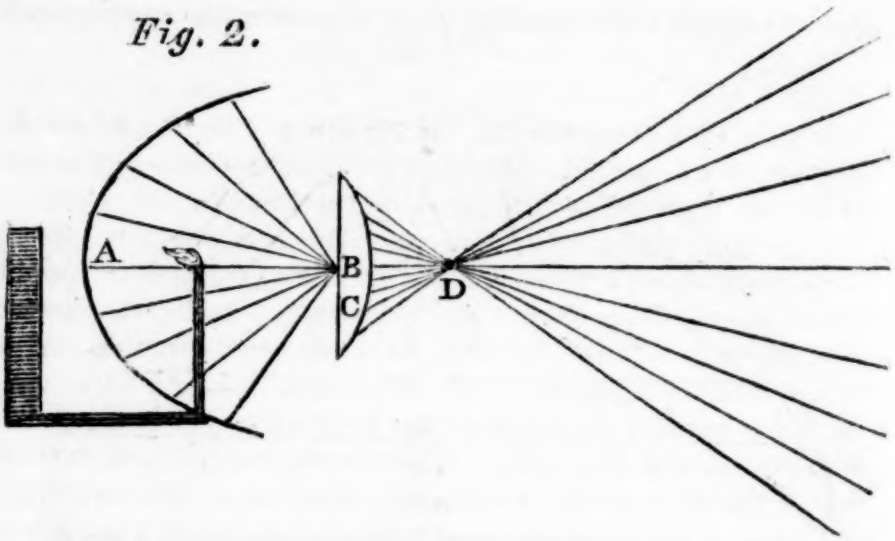


Extend your compasses from A to O and strike the circle A G; divide A to G in three equal parts; then divide A to D in three equal parts B C; then extend your compasses from B to H and strike the circle 2; extend your compasses from C to I and strike the circle 3, then extend from D to K and strike circle 4, then divide D G in three equal parts, divide D K in three equal parts as E F, extend your compasses from E to L and strike circle 5 then from F to N and strike circle 6. P P is the largest proportion of a circle that can be filled with light. From G to N is the same distance as from A to D which makes the tangent or concavity equal to the radius, or one half the diameter. 1-3d of the distance from R to N is the Focal distance S, where the light must be placed to fill the reflector.

The lamp is exactly upon Mr. Argand's, construction, and is placed, as before observed, in front of the speculum.

If it is intended to give the greatest intensity to the light, a plano convex lens is placed before the lamp, (See Fig. 2.)

Fig. 2.



In this are represented, rays passing from the Reflector A and concentrating at the focus B which are collected in the Lens C, from which they are transmitted with an additional strength, equal to the magnifying power of the Lens, passing it in straight lines which cross at the Focus D.

Thus I have endeavoured to give you an idea of the utility, and the principle of this improvement in the diffusion of light. It seems to me to be of great importance, particularly when it is considered how expensive are the equal expedients whereby we procure the supplies of that agent of vision, for domestic and economical purposes. And with the prospect which it affords of greater security to the tossing mariner, and to the cargo in his custody, you will join me in the hope, that the excellent beginnings made by Mr. Dearborn, under the direction of Mr. Gallatin, will be extended to all the stations between Scituate in the north to Wood-island in the south.

For a more detailed history of the experiments and proceedings on this subject, I must refer you to the papers laid before Congress on the 3d January, 1812. At the same time I beg you to accept the assurance of my esteem and to favour me with the continuance of yours.

SAMUEL L. MITCHILL.

Discoveries in relation to light, and economical applications thereof.

Robert R. Livingston LL. D. in a letter to Dr. Mitchill, dated Clermont 23rd. March, gives the following account of Count Rumford's late investigations:

"If this paper was not already unreasonably long, "I would give you an account of three pamphlets that I "have received, with a very interesting letter from Count "Rumford. They contain important information upon "very useful subjects. The first is his theory of light, "proved by very ingenious experiments. The second is a "description of the various lamps of his invention, by which "this theory is reduced to useful practice. The third is a "course of experiments made by him on broad wheels. I "read the last to the Society for useful arts (in Albany), "and have given the other two to be translated for their "use. As he writes me he had only a few copies printed "for the use of the Emperor, the King of Bavaria, and "other distinguished personages, they will not be published "except in the transactions of the royal society, and nation-"al institute; works, which on account of their expence, "do not reach us, they may therefore advantageously be "introduced to the American public, with *our* Society's "transactions. But, what is most important to you to "know is the following extract from his letter: "*The por-*"*table lamps are now to be seen in several shops in Paris;* "*and the Lampe-à-colonne for dining tables and drawing* "*rooms is in very general use. I wish I knew how to* "*send you one of each of them. You will hear of another* "*lamp soon destined for light houses, which gives just as* "*much light as you please.* You know the difficulty of in-"creasing the light in a light house, as well as the impor-"tance of effecting it; and I have no doubt from my in-"vestigation of his principles, that Count Rumford, has "contrived the means of doing it.——His applications are "curious, interesting and satisfactory.

REVIEW.

Humboldt's Travels, continued.

In continuation of the review of this important work, we lay before our readers a short quotation, from which they will learn that in ascending from the level of the ocean to great heights in the atmosphere, there is a succession of climates resembling those experienced in passing from the equator towards the poles.

"We have thus sketched a view of the Cordilleras of New Spain. We have remarked that the coasts alone of this vast kingdom possess a warm climate adapted for the productions of the West Indies. The intendancy of Vera Cruz, with the exception of the plain which extends from Perote to the Pic d'Orizaba, Yucatan, the coast of Oaxaca, the maratime provinces of New Santander and Texas, the new kingdom of Leon, the province of Cohahuila, the uncultivated country called Bolson de Mapini, the coast of California, the western part of Sonora, Cinaloa, and New Gallicia, the southern regions of the intendancies of Valladolid, Mexico, and La Puebla, are low grounds intersected with very inconsiderable hills. The mean temperature of these plains, of those at least situated within the tropics, and whose elevation above the level of the sea does not exceed 300* metres, is from 25° to 26°† of the centigrade thermometer; that is to say, from 8° to 9°‡ greater than the mean heat of Naples.

"These fertile regions, which the natives call *Tierras calientes*, produce in abundance sugar, indigo. cotton, and bananas. But when Europeans, not seasoned to the climate, remain in these countries for any time, particularly in populous cities, they become the abode of the yellow fever, known by the name of black vomiting, or *vomito prieto*.

* 984 feet. *Trans.* † 77° of Fahrenheit. *Trans.*
‡ From 14° to 16° of Fahrenheit. *Trans.*

The port of Acapulco, and the valleys of Papagayo and Peregrino, are among the hottest and unhealthy places of the earth. On the eastern coast of New Spain, the great heats are occasionally interrupted by strata of cold air, brought by the winds from Hudson's Bay towards the parallels of the Havannah and Vera Cruz. These impetuous winds blow from October to March; they are announced by the extraordinary manner in which they disturb the regular recurrence of the small atmospherical tides, or horary variations of the barometer; and they frequently cool the air to such a degree that at Havannah the centigrade thermometer descends to 0°,‖ and at Vera Cruz to 16°;¶ a prodigious fall for countries in the torrid zone.

"On the declivity of the Cordillera, at the elevation of 12 or 1500** metres, there reigns perpetually a soft spring temperature, which never varies more than four or five degrees, (seven or nine of Fahrenheit.) The extremes of heat and cold are there equally unknown. The natives give to this region the name of *Tierras templadas*, in which the mean heat of the whole year is from 20° to 21°.* Such is the fine climate of Xalappa, Tasco, and Chilpansingo, three cities celebrated for their great salubrity, and the abundance of fruit trees which grow in their neighbourhood. Unfortunately, this mean height of 1,300 metres† is the height to which the clouds ascend above the plains adjoining to the sea; from which circumstance these temperate regions, situated on the declivity, (for example, the environs of the city of Xalappa,) are frequently enveloped in thick fogs.

"It remains for us to speak of the third zone, known by the denomination of *Tieras frias*. It comprehends the plains elevated more than 2,200 metres‡ above the level of the ocean, of which the mean temperature is under 17°.§ In the capital of Mexico, the centigrade thermometer has been known to fall several degrees below the freezing point; but this is a very rare phenomenon; and the winters are usually as mild there as at Naples. In the coldest season, the mean heat of the day is from 13° to 14.°‖ In summer the

‖ 32° of Fahrenheit. *Trans.* ¶ 60° of Fahrenheit. *Trans.*
** From 3,936 to 4,920 feet. *Trans.*
* From 68° to 70° of Fahrenheit. *Trans.*
† 4,264 feet. *Trans.* ‡ 7,217 feet. *Trans.*
§ 62° of Fahrenheit. *Trans.*
‖ From 55° to 70° of Fahrenheit. *Trans.*

thermometer never rises in the shade above 24°.¶ The mean temperature of the whole table-land of Mexico is in general 17°** which is equal to the temperature of Rome. Yet this same table-land, according to the classification of the natives, belongs, as we have already stated to the *Tierras frias;* from which we may see that the expressions, hot or cold, have no absolute value. At Guayaquil, under a burning sky, the people of colour complain of excessive cold, when the centigrade thermometer suddenly sinks to 24°,* while it remains the rest of the day at 30°.†

"But the plains more elevated than the valley of Mexico, for example, those whose absolute height exceeds 2,500 metres,‡ possess, within the tropics, a rude and disagreeable climate, even to an inhabitant of the north. Such are the plains of Toluca, and the heights of Guchilaque, where, during a great part of the day, the air never heats to more than 6° or 8°,§ and the olive tree bears no fruit, though it is cultivated successfully a few hundred metres lower in the valley of Mexico.

"All these regions called cold enjoy a mean temperature of from 11° to 13°,¶ equal to that of France and Lombardy. Yet the vegetation is less vigorous, and the European plants do not grow with the same rapidity as in their natal soil. The winters, at an elevation of 2,500 metres, are not extremely rude; but the sun has not sufficient power in summer over the rarefied air of these plains to accelerate the developement of flowers, and to bring fruits to perfect maturity. This constant equality, this want of a strong ephemeral heat, imprints a peculiar character on the climate of the higher equinoctial regions. Thus the cultivation of several vegetables succeeds worse on the ridge of the Mexican Cordilleras than in plains situated to the north of the tropic, though frequently the mean heat of these plains is less than that of the plains between the 19° and 22° of latitude."

Nothing has been a more trite and erroneous subject of vulgar remark than the ignorance of the lazy Dons. This silly cant has been imitated in our country from the English.

¶ 75° of Fahrenheit. *Trans.* ** 62° of Fahrenheit. *Trans.*
* 75° of Fahrenheit. *Trans.* † 86° of Fahrenheit. *Trans.*
‡ 8,201 feet. *Trans.* § 43° or 46° of Fahrenheit. *Trans.*
¶ From 51° to 55° of Fahrenheit. *Trans.*

It has been so frequently repeated and so widely propagated, that many of our honest patriots sincerely believe the Spaniards are by a great difference their inferiors. This is a miserable, and unworthy prejudice. A moderate inquiry will evince that New Spain, has produced a full proportion of respectable observers and of valuable writings. And we may say without hesitation, that the Natural history of the American Provinces, subject to Castilian Monarchs, has been more particularly studied, than in the United States. And as to public spirit and patronage, it has been manifested in the endowments of learned institutions, and in the encouragement of scientific men, to an extent of which, no parallel exists in our state of Society.

We copy the author's description of the liberality and munificence of the government, as well for the purpose of correcting some of the existing mistakes, as with the desire of encouraging our legislatures, associations and wealthy individuals to imitate such noble examples:

"No city of the new continent, without even excepting those of the United States, can display such great and solid scientific establishments as the capital of Mexico. I shall content myself here with naming the School of Mines, directed by the learned Elhuyar, to which we shall return when we come to speak of the mines; the Botanic Garden; and the Academy of Painting and Sculpture. This academy bears the title of *Academia de los Nobles Artes de Mexico.* It owes its existence to the patriotism of several Mexican individuals, and to the protection of the minister Galvez. The government assigned it a spacious building, in which there is a much finer and more complete collection of casts than is to be found in any part of Germany. We are astonished on seeing that the Apollo of Belvidere, the group of Laocoon, and still more colossal statues, have been conveyed through mountainous roads at least as narrow as those of St. Gothard; and we are surprised at finding these masterpieces of antiquity collected together under the torrid zone, in a table-land higher than the convent of the great St. Bernard. The collection of casts brought to Mexico cost the king 200,000 francs. The remains of the Mexican sculpture, those colossal statues of basaltes and porphyry, which are covered with Aztec hieroglyphics, and bear some relation to the Egyptian and Hindoo style, ought to be collected together in the edifice

* 8334/ sterling. *Trans.*

of the academy, or rather in one of the courts which belong to it. It would be curious to see these monuments of the first cultivation of our species, the works of a semibarbarous people inhabiting the Mexican Andes, placed beside the beautiful forms produced under the sky of Greece and Italy.

"The revenues of the Academy of Fine Arts at Mexico amount to 125,000 francs,* of which the government gives 60,000, the body of Mexican miners nearly 25,000, the *consulado*, or association of merchants of the capital, more than 1,500. It is impossible not to perceive the influence of this establishment on the taste of the nation. This influence is particularly visible in the symmetry of the buildings, in the perfection with which the hewing of stone is conducted, and in the ornaments of the capitals and stucco relievos. What a number of beautiful edifices are to be seen at Mexico! nay, even in provincial towns like Guanaxuato and Queretaro! These monuments, which frequently cost a million and a million and a half of francs,† would appear to advantage in the finest streets of Paris, Berlin, and Petersburgh. M. Tolsa, professor of sculpture at Mexico, was even able to cast an equestrian statue of King Charles the Fourth; a work which, with the exception of the Marcus Aurelius at Rome, surpasses in beauty and purity of style every thing which remains in this way in Europe. Instruction is communicated *gratis* at the Academy of Fine Arts. It is not confined alone to the drawing of landscapes and figures; they have the good sense to employ other means for exciting the national industry. The academy labours successfully to introduce among the artisans a taste for elegance and beautiful forms. Large rooms, well lighted by Argand's lamps, contain every evening some hundreds of young people, of whom some draw from relievo or living models, while others copy drawings of furniture, chandeliers, or other ornaments in bronze. In this assemblage (and this is very remarkable in the midst of a country where the prejudices of the nobility against the casts are so inveterate) rank, colour, and race is confounded: we see the Indian and the *Mestizo* sitting beside the white, and the son of a poor artisan in emulation with the children of the great lords of the coun-

* 5,208*l.* sterling. *Trans.* † 41,670*l.* and 62,505*l.* *Trans.*

try. It is a consolation to observe, that under every zone the cultivation of science and art establishes a certain equality among men, and obliterates for a time, at least, all those petty passions of which the effects are so prejudicial to social happiness.

"Since the close of the reign of Charles the Third, and under that of Charles the Fourth, the study of the physical sciences has made great progress, not only in Mexico, but in general in all the Spanish colonies. No European government has sacrificed greater sums to advance the knowledge of the vegetable kingdom than the Spanish government. Three *botanical expeditions* in Peru, New Granada, and New Spain, under the direction of MM. Ruiz and Pavon, Don Jose Celestino Mutis, and MM. Sesse and Mocino, have cost the state near two millions of francs.* Moreover, botanical gardens have been established at Manilla and the Canary islands. The commission destined to draw plans of the canal of *los Guines*, was also appointed to examine the vegetable productions of the island of Cuba. All these researches, conducted during twenty years in the most fertile regions of the new continent, have not only enriched science with more than four thousand new species of plants, but have also contributed much to diffuse a taste for natural history among the inhabitants of the country. The city of Mexico exhibits a very interesting botanical garden within the very precincts of the viceroy's palace. Professor Cervantes gives annual courses there, which are very well attended. This *savant* possesses, besides his herbals, a rich collection of Mexican minerals. M. Mocino, whom we just now mentioned as one of the coadjutors of M. Sesse, and who has pushed his laborious excursions from the kingdom of Guatimala to the north-west coast or island of Vancouver and Quadra; and M. Echeveria, a painter of plants and animals, whose works will bear a comparison with the most perfect productions of the kind in Europe, are both of them natives of New-Spain. They had both attained a distinguished rank among *savans* and artists before quitting their country.

"The principles of the new chemistry, which is known in the Spanish colonies by the equivocal appellation of new philosophy, *(nueva filosofia,)* are more diffused in Mexi-

* 83,340*l.* sterling. *Trans.*

co than in many parts of the peninsula. A European traveller cannot undoubtedly but be surprised to meet in the interior of the country, on the very borders of California, with young Mexicans who reason on the decomposition of water in the process of amalgamation with free air. The School of Mines possesses a chemical laboratory: a geological collection, arranged according to the system of Werner; a physical cabinet, in which we not only find the valuable instruments of Ramsden, Adams, Le Noir, and Louis Berthoud, but also models executed in the capital, even with the greatest precision, and from the finest wood in the country. The best mineralogical work in the Spanish language was printed at Mexico, I mean the Manuel of Oryctognosy, composed by M. del Rio, according to the principles of the school of Freyberg, in which the author was formed. The first Spanish translation of Lavoisier's Elements of Chemistry was also published at Mexico. I cite these insulated facts because they give us the measure of the ardour with which the exact sciences are begun to be studied in the capital of New Spain. This ardour is much greater than that with which they addict themselves to the study of languages and ancient literature.

"Instruction in mathematics is less carefully attended to in the university of Mexico than in the School of Mines. The pupils of this last establishment go farther into analysis; they are instructed in the integral and differential calculi. On the return of peace and free intercourse with Europe, when astronomical instruments (chronometers, sextants, and the repeating circles of Borda) shall become more common, young men will be found in the most remote parts of the kingdom capable of making observations, and cultivating them after the most recent methods. I have already indicated in the analysis of my maps the advantage which might be drawn by the government from this extraordinary aptitude in constructing a map of the country. The taste for astronomy is very old in Mexico. Three distinguished men, Velasquez, Gama, and Alzate, did honour to their country towards the end of the last century. All the three made a great number of astronomical observations, especially of eclipses of the satellites of Jupiter. Alzate, the worst informed of them, was the correspondent of the Academy of Sciences at Paris. Inaccurate as an observer, and of an activity frequently impetuous, he

gave himself up to too many objects at a time. We have already discussed in the geographical introduction the merits of his astronomical labours. He is entitled to the real merit, however, of having excited his countrymen to the study of the physical sciences. The *Gazetta de Litteratura*, which he published for a long time at Mexico, contributed singularly to give encouragement and impulsion to the Mexican youth."

That Intendancy of New Spain which lies contiguous to the territory of the United States, is that of Saint Louis Potosi. It is highly gratifying to acquire correct information of this neighbouring region, about which, we have heretofore known so little. Its extent and jurisdiction are pourtrayed in Vol. 2. p. 182 and seq. The natural position and civil arrangement of this vast region are described in a manner two interesting to the Fredish citizen to be passed over. We therefore insert it, as it forms the tenth article of his statistical analysis.

"This intendancy comprehends the whole of the north-east part of the kingdom of New Spain. As it borders either on desert countries, or countries inhabited by wandering and independent Indians, we may say that its northern limits are hardly determined. The mountainous tract called the *Bolson de Mapimi* includes more than 3,000 square leagues, from which the Apachis sally out to attack the colonists of Cohahuila and New Biscay. Indented into these two provinces, and bounded on the north by the great Rio del Norte, the Bolson de Mapimi is sometimes considered as a country not conquered by the Spaniards, and sometimes as composing a part of the intendancy of Durango. I have traced the limits of Cohahuila and Texas, near the mouth of the Rio Puerco, and towards the sources of the Rio de San Saba, as I found them indicated in the special maps preserved in the archives of the viceroyalty, and drawn up by engineers in the Spanish service. But how is it possible to determine territorial limits in immense savannas, where the farms are from 15 to 20 leagues distant from one another, and where almost no trace of cultivation is any where to be found?

"The intendancy of San Luis Potosi comprehends parts of a very heterogeneous nature, the different denominations of which have given great room for geographical errors. It is composed of provinces, of which some belong to the

Provincias internas, and others to the kingdom of New Spain Proper. Of the former there are two immediately depending on the commandant of the *Provincias internas;* the two others are considered as *Provincias internas del Vireynato.* These complicated and unnatural divisions are explained in the following table:

The intendant of San Luis Potosi governs:

A. In Mexico Proper:
   The *Province of San Luis*, which extends from the Rio de Panuco to the Rio de Santander, and which comprehends the important mines of Charcas, Potosi, Ramos, and Catorce.

B. In the *Provincias internas del Vireynato:*
   1. The new kingdom of Leon.
   2. The colony of New Santander.

C. In the *Provincias internas de la Comandancia general Oriental.*
   1. The province of Cohahuila.
   2. The province of Texas.

"It follows from what we have already said on the latest changes which have taken place in the organization of the *Comandancia general* of Chihuahua, that the intendancy of San Luis now includes, besides the province of Potosi, all which goes under the denomination of *Provincias internas Orientales.* A single intendant is consequently at the head of an administration which includes a greater surface than all European Spain. But this immense country, gifted by nature with the most precious productions, and situated under a serene sky in the temperate zone, towards the borders of the tropic, is, for the greatest part, a wild desert, still more thinly peopled than the governments of Asiatic Russia. Its position on the eastern limits of New Spain, the proximity of the United States, the frequency of communication with the colonists of Louisiana, and a great number of circumstances which I shall not endeavour here to develop, will probably soon favour the progress of civilization and prosperity in these vast and fertile regions.

"The intendancy of San Luis comprehends more than 230 leagues of coast, an extent equal to that from Genoa to Reggio in Calabria. But all this coast is without commerce and without activity, with the exception of a few

small vessels, which come from the West Indies to lay in provisions either at the Bar of Tampico, near Panuco, or at the anchorage of New Santander. That part which extends from the mouth of the great Rio del Norte to the Rio Sabina is almost still unknown, and has never been examined by navigators. It would be of great importance, however, to discover a good port in this northern extremity of the gulf of Mexico. Unfortunately, the eastern coast of New Spain offers everywhere the same obstacles, a want of depth for vessels drawing more than 38 decimetres of water, bars at the mouths of the rivers, necks of land, and long islots, of which the direction is parallel to that of the continent, and which prevent all access to the interior basin. The shore of the provinces of Santander and Texas, from the 21° to the 29° of latitude, is singularly festooned, and presents a succession of interior basins, from four to five leagues in breadth, and 40 to 50 in length. They go by the name of *lagunas*, or salt water lakes. Some of them (the Laguna de Tamiagua, for example) are completely shut in. Others, as the Laguna Madre, and the Laguna de San Bernardo, communicate by several channels with the ocean. The latter are of great advantage for a coasting trade, as coasting vessels are there secure from the great swells of the ocean. It would be interesting for geology to examine on the spot if these lagunas have been formed by currents penetrating far into the country by irruptions, or if these long and narrow islots, ranged parallel to the coast, are bars which have gradually risen above the mean level of the waters.

"Of the whole intendancy of San Luis Potosi, only that part which adjoins the province of Zacatecas, in which are the rich mines of Charcas, Guadalcazar, and Catorce, is a cold and mountainous country. The bishopric of Montery, which bears the pompous title of New Kingdom of Leon, Cohahuila, Santander, and Texas, are very low regions; and there is very little undulation of surface in them. This soil is covered with secondary and alluvial formations. They possess an unequal climate, extremely hot in summer, and equally cold in winter, when the north winds drive before them columns of cold air from Canada towards the torrid zone.

"Since the cession of Louisiana to the United States, the bounds between the province of Texas and the county

* 12 Feet 5 6-10 Inches.

of Natchitoches (a county which is an integral part of the confederation of American republics) have become the subject of a political discussion, equally tedious and unprofitable. Several members of the Congress of Washington were of opinion that the territory of Louisiana might be extended to the left bank of the Rio bravo del Norte. According to them, "all the country called by the Mexicans the province of Texas anciently belonged to Louisiana. Now the United States ought to possess this last province in the whole extent of rights in which it was possessed by France before its cession to Spain; and neither the new denominations introduced by the viceroys of Mexico, nor the progress of population from Texas towards the east, can derogate from the lawful titles of the congress." During these debates, the American government did not fail frequently to adduce the establishment that M. de Lasale, a Frenchman, formed about the year 1685 near the bay of St. Bernard, without having appeared to encroach on the rights of the crown of Spain.

"But on examining carefully the general map which I have given of Mexico and the adjacent countries on the east, we shall see that there is still a great way from the bay of St. Bernard to the mouth of the Rio del Norte. Hence the Mexicans very justly allege in their favour, that the Spanish population of Texas is of a very old date, and that it was brought, in the early periods of the conquest, by Linares, Revilla and Camargo, from the interior of New Spain; and that M. de Lasale, on disembarking to the west of the Mississippi, found Spaniards at that time among the savages whom he endeavoured to combat. At present, the intendant of San Luis Potosi considers the Rio Mermentas, or Mexicana, which flows into the Gulf of Mexico to the east of the Rio de Sabina, as the eastern limit of the province of Texas, and consequently of his whole intendancy.

"It may be useful to observe here, that this dispute as to the true boundaries of New Spain can only become of importance when the country, brought into cultivation by the colonists of Louisiana, shall come in contact with the territory inhabited by Mexican colonists; when a village of the province of Texas shall be constructed near a village of the county of the Opeloussas. Fort Clayborne, situated near the old Spanish mission of the Adayes (Adaes or Adaisses,

on the Red River, is the settlement of Louisiana which approaches nearest to the military posts (*presidios*) of the province of Texas; and yet there are nearly 68 leagues from the presidio of Nacogdoch to Fort Claybornе. Vast steppes, covered with gramina, serve for common boundaries between the American confederation and the Mexican territory. All the country to the west of the Mississippi, from the Ox River to the Rio Colorado of Texas is uninhabited. These steppes, partly marshy, present obstacles very easily overcome. We may consider them as an arm of the sea which separates adjoining coasts, but which the industry of new colonists will soon penetrate. In the United States the population of the Atlantic provinces flowed first towards the Ohio and the Tennessee, and then towards Louisiana. A part of this fluctuating population will soon move farther to the westward. The very name of Mexican territory will suggest the idea of proximity of mines; and on the banks of the Rio Mermentas the American colonist will already in imagination possess a soil abounding in metallic wealth. This error, diffused among the lower people, will give rise to new emigrations; and they will only learn very late that the famous mines of Catorce, which are the nearest to Louisiana, are still more than 300 leagues distant from it.

"Several of my Mexican friends have gone the road from New Orleans to the capital of New Spain. This road, opened by the inhabitants of Louisiana, who come to purchase horses in the provincias internas, is more than 540 leagues in length, and is consequently equal to the distance from Madrid to Warsaw. This road is said to be very difficult from the want of water and habitations; but it presents by no means the same natural difficulties as must be overcome in the tracks along the ridge of the Cordilleras from Santa Fe in New Granada to Quito, or from Quito to Cusco. It was by this road of Texas that an intrepid traveller, M. Pagés, captain in the French navy, went in 1767 from Louisiana to Acapulco. The details which he furnishes relative to the intendancy of San Luis Potosi, and the road from Queretaro to Acapulco, which I travelled thirty years afterwards, display great precision of mind and love of truth; but, unfortunately, this traveller is so incorrect in the orthography of Mexican and Spanish names, that we can with difficulty find out from his de-

scriptions the places through which he passed. The road from Louisiana to Mexico presents very few obstacles until the Rio del Norte, and we only begin from the Saltillo to ascend towards the table-land of Anahuac. The declivity of the Cordillera is by no means rapid there; and we can have no doubt, considering the progress of civilization in the new continent, that land communication will become gradually very frequent between the United States and New Spain. Public coaches will one day roll on from Philadelphia and Washington to Mexico and Acapulco.

"The three counties of the state of Louisiana, or New Orleans, which approach nearest to the desert country considered as the eastern limit of the province of Texas, are, reckoning from south to north, the counties of the Attacappas, of the Opeloussas, and of the Nachitoches. The latest settlements of Louisiana are on a meridian which is twenty-five leagues east from the mouth of the Rio Mermentas. The most northern town is Fort Clayborne of Natchitoches, seven leagues east from the old situation of the mission of the Adayes. To the north-east of Clayborne is the *Spanish Lake*, in the midst of which there is a great rock covered with stalactites. Following this lake to the south-south-east, we meet in the extremities of this fine country, brought into cultivation by colonists of French origin, first, with the small village of St. Landry, three leagues to the north of the sources of the Rio Mermentas; then the plantation of S. Martin; and, lastly, New Iberia, on the river Teche, near the canal of Bontet, which leads to the lake of Tase. As there is no Mexican settlement beyond the eastern bank of the Rio Sabina, it follows that the uninhabited country which separates the villages of Louisiana from the missions of Texas amounts to more than 1,500 square leagues. The most southern part of these savannas, between the bay of Carcusin and the bay of la Sabina, presents nothing but impassable marshes. The road from Louisiana to Mexico goes therefore farther to the north, and follows the parallel of the 32d degree. From Natchez travellers strike to the north of the lake Cataouillou, by Fort Clayborne of Natchitoches; and from thence they pass by the old situation of the Adayes to Chichi, and the fountain of Father Gama. An able engineer, M. Lafond, whose map throws much light on these countries, observes, that eight leagues north from the post of

Chichi there are hills abounding in coal, from which a subterraneous noise is heard at a distance like the discharge of artillery. Does this curious phenomenon announce a disengagement of hydrogen produced by a bed of coal in a state of inflammation? From the Adayes the road of Mexico goes by San Antonio de Bejar, Loredo, (on the banks of the Rio grande del Norte,) Saltillo, Charcas, San Luis Potosi, and Queretaro, to the capital of New Spain. Two months and a half are required to travel over this vast extent of country, in which, from the left bank of the Rio grande del Norte to Natchitoches we continually sleep *sub die*.

"The most remarkable places of the intendancy of San Luis are:

"*San Luis Potosi*, the residence of the intendant, situated on the eastern declivity of the table-land of Anahuac, to the west of the sources of the Rio de Panuca. The habitual population of this town is 12,000.

"*Nuevo Santander*, capital of the province of the same name, does not admit the entry of vessels drawing more than from eight to ten *palmas** of water. The village of *Sotto la Marina*, to the east of Santander, might become of great consequence to the trade of this coast could the port be remedied. At present the province of Santander is so desert, that fertile districts of ten or twelve square leagues were sold there in 1802 for ten or twelve francs.

"*Charcas*, or Santa Maria de las Charcas, a very considerable small town, the seat of a *diputacion de Minas*.

"*Catorce*, or la Purissima Concepcion de Alamos de Catorce, one of the richest mines of New Spain. The *Real* de Catorce, however, has only been in existence since 1773, when Don Sebastian Coronado and Don Bernabe Antonio de Zepeda discovered these celebrated seams, which yield annually the value of more than from 18 to 20 millions of francs.*

"*Montery*, the seat of a bishop, in the small kingdom of Leon.

"*Linares*, in the same kingdom, between the Rio Tigre and the great Rio Bravo del Norte.

* From 5 1.2 to 6.878 feet. *Trans.*

* From 730,460*l.* to 833,500*l.* sterling. *Trans.*

" *Monclova*, a military post, (*presidio*,) capital of the province of Cohahuila, and residence of a governor.

San Antonio de Bejar, capital of the province of Texas, between the Rio de los Nogales and the Rio de San Antonio."

According to the calculations of this traveller, the total population of New Spain amounts to 5,837,100 persons: of whom 2,500,000 are Indigenes or Indians; 1,100,000 are whites or Spaniards of the European and Creole races; 6,100 African negroes; and 1,231,000 of the mixed blood of Mestizos, Mulattoes, Lamboes, and their varieties. As these numbers however are not the result of a regular census, they are to be received as approximations only, and as such, liable to considerable uncertainty.

His history of the banana, manioc and maize, in that work are beautiful disquisitions of a botanical and agricultural kind. And the abundant harvest of wheat which the table-land of Mexico can afford, are matters of important consideration to the political economists of the United States, when they reflect on the quantity of that grain and of the flour prepared from it, which may be exported from Vera Cruz, and Acapulco when these roads shall be improved, and their government amended.

American Ornithology; or the natural history of the Birds of the United States. Illustrated with plates, engraved and coloured from original drawings, taken from nature. By ALEXANDER WILSON. VOL. IV. *Philadelphia, Bradford and Inskeep, large 4to pp.* 100.

This indefatigable, and incomparable zoologist continues his labours. We have no cause to retract the favourable sentiments, which we expressed on the three former volumes of this work. We discover no falling off either in the paper, the type, the drawings, the colourings or the descriptions.

Mr. W. informs his patrons that he has been very successful in his shooting excursions, particularly along the Atlantic coast; and that the arrangements he has made with engravers and other artists employed in the publica-

tion, will enable to bring forward the succeeding parts, with more punctuality. He assures them too, that he will constantly superintend the plates and the paintings, and cause them to be executed correctly under his own eye. He is endeavouring to introduce the method of printing the plates in colours, an art in which the French, at present, excel. And on all these matters we offer congratulation to our readers.

The figures in this volume are thirty-one in number; and represent the *yellow-billed cuckoo, the black-billed cuckoo, the blue yellow-backed warbler, yellow red-poll warbler, the Ivory-billed wood-pecker, the pileated wood-pecker, red-headed woodpecker, the red-winged starling, (male and female), the black-poll warbler, lesser red poll, American cross-bill, (male and female), white-winged cross-bill, white crowned bunting, Bay-winged bunting, Snow owl, Male sparrow hawk, rough-legged falcon, barred owl, short-eared owl, little owl, sea-side finch, sharp tailed finch, Savannah finch, winter falcon, magpie, crow, and the white headed Eagle;* amounting to twenty-seven species.

We notice a peculiarity which Mr. Wilson, has mentioned relative to the structure of the eye in birds of the owl family. In five or six species of these birds, he found the globe of the eye to be immovably fixed in its socket, by a strong elastic, hard, cartilaginous case, in form of a truncated cone. This case being closely covered with a skin appears at first to be of one continued piece. But on removing the exterior membrane it is found to be formed of fifteen pieces placed like the staves of a cask, over lapping a little at the base or narrow end, and seem as if capable of being enlarged or contracted, perhaps by the muscular membrane with which they are incased. The eye being thus fixed, these birds, as they view different objects, are always obliged to turn the head; and nature has so excellently adapted their neck to this purpose, that they can, with ease, turn it round, without moving the body, in almost a complete circle.

This discerning observer has separated the American cross bills, from the genus *Loxia*, which comprehends the European species, and constituted a new genus which he denominates *Curvirostra*. The two species he describes are the *Americana*, and *leucoptera*. The former inhabits almost all our pine forests situated to the Northward of

latitude 40°, from the beginning of September to the middle of April. Its favourite food is the seed of the pine, which it detaches from the cone and husk, with admirable readiness by means of its forficated beak.

His history of the Ivory billed woodpecker, of the red-winged starling and the snow owl, will be perused with pleasure by all the lovers of ornithology, and particularly by those who relish the descriptions of the lives and manners, by so exact a biographer as Mr. W.

But we quit humbler and smaller game, to treat them with his account of the *Falco leucocephalus* or Bald Eagle as he is called, in our country, from p. 89 and seq :

" This distinguished bird, as he is the most beautiful of his tribe in this part of the world, and the adopted *emblem* of our country, is entitled to particular notice. He is represented, in the plate, of one third his natural size, and was drawn from one of the largest and most perfect specimens I have yet met with. In the back ground is seen a distant view of the celebrated cataract of Niagara, a noted place of resort for those birds, as well on account of the fish procured there, as for the numerous carcases of squirrels, deer, bear and various other animals, that in their attempts to cross the river above the falls, have been dragged into the current, and precipitated down that tremendous gulf, where, among the rocks that bound the rapids below, they furnish a rich repast for the Vulture, the Raven, and the Bald Eagle, the subject of the present account.

" This bird has been long known to naturalists, being common to both continents, and occasionally met with from a very high northern latitude, to the borders of the torrid zone, but chiefly in the vicinity of the sea, and along the shores and cliffs of our lakes and large rivers. Formed by nature for braving the severest cold ; feeding equally on the produce of the sea, and of the land ; possessing powers of flight capable of outstripping even the tempests themselves ; unawed by any thing but man ; and from the ethereal heights to which he soars, looking abroad, at one glance, on an immeasurable expanse of forests, fields, lakes and ocean, deep below him, he appears indifferent to the little localities of change of seasons ; as in a few minutes he can pass from summer to winter, from the lower to the higher regions of the atmosphere, the abode of eternal cold, and from thence descend at will to the torrid or the arctic re-

gions of the earth, He is therefore found at all seasons in the countries he inhabits; but prefers such places as have been mentioned above, from the great partiality he has for fish.

"In procuring these he displays, in a very singular manner, the genius and energy of his character, which is fierce, contemplative, daring and tyrannical; attributes not exerted but on particular occasions; but when put forth, overpowering all opposition. Elevated on the high dead limb of some gigantic tree that commands a wide view of the neighbouring shore and ocean, he seems calmly to contemplate the motions of the various feathered tribes that pursue their busy avocations below; the snow white Gulls slowly winnowing the air; the busy Tringæ coursing along the sands; trains of Ducks streaming over the surface; silent and watchful Cranes, intent and wading; clamorous Crows, and all the winged multitudes that subsist by the bounty of this vast liquid magazine of nature. High over all these hovers one, whose action instantly arrests all his attention. By his wide curvature of wing, and sudden suspension in air, he knows him to be the *Fish-Hawk*, settling over some devoted victim of the deep. His eye kindles at the sight, and balancing himself, with half opened wings, on the branch, he watches the result. Down, rapid as an arrow from heaven, descends the distant object of his attention, the roar of its wings reaching the ear as it disappears in the deep, making the surges foam around! At this moment the eager looks of the Eagle are all ardour; and levelling his neck for flight, he sees the Fish-Hawk once more emerge, struggling with his prey, and mounting in the air with screams of exultation. These are the signal for our hero, who, launching into the air, instantly gives chace, soon gains on the Fish-Hawk, each exerts his utmost to mount above the other, displaying in these rencontres the most elegant and sublime aerial evolutions. The unincumbered Eagle rapidly advances, and is just on the point of reaching his opponent, when with a sudden scream probably of despair and honest execration, the latter drops his fish; the Eagle poising himself for a moment, as if to take a more certain aim, descends like a whirlwind, snatches it in his grasp ere it reaches the water, and bears his ill-gotten booty silently away to the woods.

"These predatory attacks and defensive manœuvres of

the Eagle and the Fish-Hawk, are matters of daily observation along the whole of our sea board, from Georgia to New England, and frequently excite great interest in the spectators. Sympathy, however, on this as on most other occasions, generally sides with the honest and laborious sufferer, in opposition to the attacks of power, injustice and rapacity, qualities for which our hero is so generally notorious, and which, in his superior *man*, are certainly detestable. As for the feelings of the poor fish they seem altogether out of the question.

"When driven, as he sometimes is, by the combined courage and perseverance of the Fish-Hawks from their neighbourhood, and forced to hunt for himself, he retires more inland, in search of young pigs, of which he destroys great numbers. In the lower parts of Virginia and North Carolina, where the inhabitants raise vast herds of those animals, complaints of this kind are very general against him. He also destroys young lambs in the early part of spring; and will sometimes attack old sickly sheep, aiming furiously at their eyes.

"In corroboration of the remarks I have myself made on the manners of the Bald Eagle, many accounts have reached me from various persons of respectability, living on or near our sea coast; the substance of all these I shall endeavour to incorporate with the present account.

"Mr. John L. Gardiner, who resides on an island of three thousand acres, about three miles from the eastern point of Long island, from which it is separated by Gardiner's bay, and who has consequently many opportunities of observing the habits of these birds, has favored me with a number of interesting particulars on this subject; for which I beg leave thus publickly to return my grateful acknowledgment.

"The Bald Eagles," says this gentleman, "remain on "this island during the whole winter. They can be most "easily discovered on evenings by their loud snoring while "asleep on high oak trees; and when awake their hearing "seems to be nearly as good as their sight. I think I men-"tioned to you that I had myself seen one flying with a "lamb ten days old, and which it dropped on the ground, "from about ten or twelve feet high. The struggling of "the lamb, more than its weight, prevented its carrying it "away. My running, hallooing, and being very near,

"might prevent its completing its design. It had broke "the back in the act of seizing it; and I was under the ne- "cessity of killing it outright to prevent its misery. The "lamb's dam seemed astonished to see its innocent offspring "borne off into the air by a bird.

"I was lately told," continues Mr. Gardiner, "by a man "of truth, that he saw an Eagle rob a Hawk of its fish, and "the Hawk seemed so enraged as to fly down at the Eagle, "while the Eagle very deliberately, in the air, threw him- "self partly over on his back, and while he grasped with "one foot the fish, extended the other to threaten or seize "the Hawk. I have known several Hawks unite to at- "tack the Eagle; but never knew a single one to do it. "The Eagle seems to regard the Hawks as the Hawks do "the King-birds, only as teasing troublesome fellows."

"From the same intelligent and obliging friend I lately received a well preserved skin of the Bald Eagle, which, from its appearance, and the note that accompanied it, seems to have belonged to a very formidable individual. "It was shot," says Mr. Gardiner, "last winter, on this isl- "and, and weighed thirteen pounds, measured three feet "in length, and seven from tip to tip of the expanded "wings; was extremely fierce looking; though wounded "would turn his back to no one; fastened his claws into "the head of a dog, and was with difficulty disengaged. "I have rode on horseback within five or six rod of one, "who, by his bold demeanour, raising his feathers, &c. "seemed willing to dispute the ground with its owner. "The crop of the present was full of mutton, from my part "blood Merinos; and his intestines contained feathers, "which he probably devoured with a Duck or winter Gull, "as I observed an entire foot and leg of some water fowl. "I had two killed previous to this which weighed ten "pounds avoirdupois each."

"The intrepidity of character, mentioned above, may be farther illustrated by the following fact, which occured a few years ago near Great Egg-harbour, New Jersey. A woman who happened to be weeding in the garden, had set her child down near, to amuse itself while she was at work; when a sudden and extraordinary rushing sound, and a scream from her child alarmed her, and starting up she beheld the infant thrown down, and dragged some few feet, and a large Bald Eagle bearing off a fragment of its

frock, which being the only part seized, and giving way, providentially saved the life of the infant.

"The appetite of the Bald Eagle, though habituated to long fasting, is of the most voracious and often the most indelicate kind. Fish, when he can obtain them, are preferred to all other fare. Young lambs and pigs are dainty morsels, and made free with on all favourable occasions. Ducks, Geese, Gulls and other sea fowl, are also seized with avidity. The most putrid carrion, when nothing better can be had, is acceptable; and the collected groups of gormandizing Vultures, on the approach of this dignified personage, instantly disperse, and make way for their master, waiting his departure in sullen silence, and at a respectful distance, on the adjacent trees.

"In one of those partial migrations of tree squirrels that sometimes take place in our western forests, many thousands of them were drowned in attempting to cross the Ohio; and at a certain place, not far from Wheeling, a prodigious number of their dead bodies were floated to the shore by an eddy. Here the Vultures assembled in great force, and had regaled themselves for some time, when a Bald Eagle made his appearance, and took sole possession of the premises, keeping the whole Vultures at their proper distance for several days. He has also been seen navigating the same river on a floating carrion, though scarcely raised above the surface of the water, and tugging at the carcase, regardless of snags, sawyers, planters or shallows. He sometimes carries his tyranny to great extremes against the Vultures. In hard times, when food happens to be scarce, should he accidentally meet with one of these who has its craw crammed with carrion, he attacks it fiercely in air; the cowardly Vulture instantly *disgorges*, and the delicious contents are snatched up by the Eagle before they reach the ground.

"The nest of this species is generally fixed on a very large and lofty tree, often in a swamp, or morass, and difficult to be ascended. On some noted tree of this description, often a pine or cypress, the Bald Eagle builds, year after year, for a long series of years. When both male and female have been shot from the nest, another pair has soon after taken possession. The nest is large, being added to and repaired every season, until it becomes a black prominent mass, observable at a considerable distance.

It is formed of large sticks, sods, earthy rubbish, hay, moss, &c. Many have stated to me that the female lays first a single egg, and that after having sat on it for some time she lays another; when the first is hatched the warmth of that it is pretended, hatches the other. Whether this be correct or not I cannot determine; but a very respectable gentleman of Virginia assured me, that he saw a large tree cut down, containing the nest of a Bald Eagle, in which were two young, one of which appeared nearly three times as large as the other. As a proof of their attachment to their young, a person near Norfolk informed me, that in clearing a piece of woods on his place, they met with a large dead pine tree, on which was a Bald Eagle's nest and young. The tree being on fire more than half way up, and the flames rapidly ascending, the parent Eagle darted around and among the flames, until her plumage was so much injured that it was with difficulty she could make her escape, and even then, she several times attempted to return to relieve her offspring.

"No bird provides more abundantly for its young than the Bald Eagle. Fish are daily carried thither in numbers, so that they sometimes lie scattered round the tree, and the putrid smell of the nest may be distinguished at the distance of several hundred yards. The young are at first covered with a thick whitish or cream coloured cottony down; they gradually become of a grey colour as their plumage developes itself, continue of the brown grey until the third year, when the white begins to make its appearance on the head, neck, tail coverts and tail; these by the end of the fourth year are completely white, or very slightly tinged with cream; the eye also is at first hazel, but gradually brightens into a brilliant straw colour, with the white plumage of the head. Such as least was the gradual progress of this change, witnessed by myself, on a very fine specimen brought up by a gentleman a friend of mine, who for a considerable time believed it to be what is usually called the Grey Eagle, and was much surprised at the gradual metamorphosis. This will account for the circumstance, so frequently observed, of the Grey and White-headed Eagle being seen together, both being in fact the same species, in different stages of colour, according to their difference of age.

"The flight of the Bald Eagle, when taken into consider-

ation with the ardour and energy of his character, is noble and interesting. Sometimes the human eye can just discern him, like a minute speck, moving in slow curvatures along the face of the heavens, as if reconnoitring the earth at that immense distance. Sometimes he glides along in a direct horizontal line, at a vast height, with expanded and unmoving wings, till he gradually disappears in the distant blue ether. Seen gliding in easy circles over the high shores and mountainous cliffs that tower above the Hudson and Susquehanna, he attracts the eye of the intelligent voyager, and adds great interest to the scenery. At the great cataract of Niagara, already mentioned, there rises from the gulf into which the falls of the Horse-shoe descends, a stupendous column of smoke, or spray, reaching to the heavens, and moving off in large black clouds, according to the direction of the wind, forming a very striking and majestic appearance. The Eagles are here seen sailing about, sometimes losing themselves in this thick column, and again re-appearing in another place, with such ease and elegance of motion, as renders the whole truly sublime.

> High o'er the watery uproar, silent seen,
> Sailing sedate in majesty serene,
> Now midst the pillar'd spray sublimely lost,
> And now, emerging, down the rapids tost,
> Glides the Bald Eagle, gazing, calm and slow
> O'er all the horrors of the scene below;
> Intent alone to sate himself with blood,
> From the torn victims of the raging flood.

The Botanist, being the botanical part of a course of lectures on Natural History, delivered in the university at Cambridge; together with a discourse on the principle of vitality. By BENJAMIN WATERHOUSE, M. D. &c. &c. &c.—Boston, Buckingham, 1811. 8vo. pp. 263.

DURING the existence of that valuable literary journal, the *Monthly Anthology*, the essays which make up the principal part of the present volume, appeared on its pages,

between the years 1804 and 1808. It appears that the person who undertook that periodical work in 1803, had been a medical pupil of Professor W., and had often asked leave to print in his new work, certain portions of the lectures on Natural History, which had been delivered in Harvard College, ever since the year 1788. This request being deemed substantially reasonable, the author instead of trusting to the memorandums of his hearers, made a selection for himself, from the division of his course that related to vegetables.

The work is dedicated to John Adams, the late president of the United States, as a testimonial of the author's gratitude to him, for having at an early day, recommended Natural History to his countrymen, and as a mark of his individual esteem and respect. After the removal of the school of Natural History, as well as that of Physic, from Cambridge to Boston, in 1810, the former became so much a matter of conversation among persons of the first condition, and of both sexes, that Dr. W. judged it proper to correct and enlarge their ideas on the subject: and one of the means employed, was the publication now before us, in which he labours to inculcate a more worthy and dignified conception of Botany, than had been heretofore entertained.

Natural History may be termed from its vast and almost unlimited extent, a *nomen generalissimum;* a term comprehending a cluster of sciences, and a grand aggregate of knowledge. Botany, Mineralogy, and Zoology, are three of its branches; and Medicine, extensive as it is, is but an appendage to Zoology, containing the history of the diseases to which animals are subjected; unless, indeed, the maladies of plants be considered as referable to the same head. A mere student of the healing art therefore, limits himself to the contemplation of an incidental circumstance in the history of animals, (and plants) and if he wishes to be fully instructed, must extend his views far beyond the origin, symptoms, and the cures of distempers.

The essays are twenty in number. They begin with the commencement of the lectures, under the Rev. Dr. Willard's presidency, by the author in 1788, and contain a promise of their progress and termination for the information of the public. Seeds, soils, elements, and configura-

tion, are severally discussed. The anatomy and physiology of plants are displayed, with all the technical terms of the science. Then follows a biographical sketch of Linnæus, and a historical abstract of Botany, with the different methods of classification, as proposed by the several masters, from Conrad Gesner, to the Swedish professor. Afterwards he treats of botanical gardens, from that of Padua, founded in 1533, to that of Fothergill at Upton. He next treats of the writings of Castesby, and the garden of Curtis, and makes observations on the natural positions of vegetables, according to the elevation from the level of the ocean, towards the summits of the mountains. He next discourses on the functions of the leaves, the efficacy of rain, and the constitution of the blossom. Thence he proceeds to a display of the Linnæan or sexual classification. Essential oils are then described. The fair sex, and more especially Mrs. Blackwell and Miss Merian, are complimented; and an animated descant on the beauty, variety, and economy of flowers, concludes the labours of our botanist.

Though we do not think the performance before us will supersede the use of the elementary books, we nevertheless consider it as indicating the industrious research and scientific zeal of the author. They who have not attended to this department of knowledge before, may acquire a taste or a relish, by turning over his pages; and they who are already initiated, may find amusement in accompanying him through his fields of discussion.—He has not adhered to rigid method, but makes his observations frequently in a desultory way. Of this, however, our readers shall judge for themselves, by examining an extract from the 215th and the following pages

"We have already described the parts essential to every flower; and have showed that botanists were, a long time, puzzled how to define one. A flower is to the plant or herbage, what the human face is to the body; being that part which particularly marks and characterizes the man. This was Milton's idea, who bestows upon it the epithet of *consummate*, as containing and expressing an assemblage of all its virtues and excellencies. The ancients appear to have had a similar notion of this bright countenance of a plant. Pliny says that blossoms are the joy of trees, in bearing which they 'assume a new countenance, or aspect,

vying with each other in the luxuriance, and variety of their colours. Poets of all ages and nations have run a parallel between man and plants; and have compared the most blooming and beautiful part of our species to those flowers that are the most charming for their aspect, and their fragrance. So also have the modern poets.

> Upon her head the various wreath;
> The flowers, less blooming than her face;
> Their scent, less fragrant than her breath.*

"Throughout inanimate nature, is there any thing which unites so many delightful circumstances as certain flowers? They have a cool, a smooth and polished surface, very grateful to the touch: they have a beauty transcending almost every thing else in nature; they have a fragrance surpassing every thing in creation; and they exude a nectarious fluid, proverbial for its delicious sweetness. Here every sense, excepting the hearing, is regaled.

"No part of a plant approaches so near animation as the flowers; and some think that the nectaria are those parts of it, destined by nature to unite the vegetable to the animal kingdom, and so to make them circulate from one to the other; the bee, in this case, being a link in the chain. Some plants discover a remarkable sensibility, or irritability in their stamina and pistilla, or rather in their anthers and stigma, as in our common barberry, or in rue, where their motions seem, at times, to mimic animal life.

"The pollen and the stigma are always in perfection at the same time. If viewed through a microscope, each particle of pollen appears to be a membranous bag, or bladder, which remains entire till it comes in contact with water, and then it bursts with an elastic force, discharging a most subtile vapour, which we presume impregnates the pistillum, and gradually expands the germ. But, lest these minute capsules should burst, by coming in contact with any moisture, and prematurely emit their vapour, nature has guarded many flowers from its effect, by covering over the pollen with so perfect a *parapluie*, as in our sarracenia, or *forefather's-cup*, that it would not be extravagant to suppose, that it might have given the first idea of this instrument. The pollen of the blue iris has a double covering of another kind. The pendant position of some flowers sufficiently

* Prior.

guards them from moisture, at that period of their existence when it would be injurious to them, as in the crown imperial. Many flowers shew an instinctive sensibility of approaching rain; and in that state of the atmosphere which precedes it, shut up their corolla, so as to cover completely their anthers and stigma. Sometimes, indeed, a thunder storm overtakes them by surprise, before they are prepared to close.

"Aquatic plants, or such as naturally grow in water, have their pollen carefully guarded from moisture, as we see in the family of Nymphœa. The *Lotos*, celebrated through so many ages and countries, is one of them. This venerated plant closes its flowers, and sinks under water in the night; and rises again in the morning to salute the sun. But none of the aquatic plants is more curious than the *valesnaria spiralis*, which blossoms under water; yet is its fecundating powder secured from moisture.

"Although each bud and flower seems to be a complete system, or individual, yet are they but parts of a whole: for notwithstanding the distance, and difference between the roots of a tree and its flowers, there is a remarkable consent or sympathy between them; for when the roots are exuberant the flowers are defective; yet this is not more surprising than that instance of sympathy, which subsists between our stomachs and our eyes; for we know that irritations in the alimentary canal (which corresponds to the roots of a plant) are discoverable in the organs of sight.

"Enraptured as we often are with the splendour and fragrance of flowers, their transitory beauty frequently occasions the unconscious sigh. Their evanescent existence has so often been compared to the corresponding periods of human life, that they are seldom contemplated without a mixture of melancholy. The man who has unhappily imbibed the comfortless doctrine of a blind nature, that labours, through the whole of its wonderful works, without end or design, receives no cheering impressions on a sight of the transient flower: yet must he know, on a moment's reflection, that although the flower fleeth like a shadow, its species never dies; but contains within itself the principle of perpetual renovation. And he who has stopped short of saying in his heart "*there is no God!*" but having imbibed a notion that death is an everlasting sleep, is apt to compare himself with the plant, and to repine at the difference. He

observes the pride of our forests, the oak, shedding his leaves in the autumn; and sees them renovated in the spring, and going on reclothing and flourishing through ages, while he, surveying his decayed and nerveless limbs, sighs out in despair—there is no returning spring for me! Every revolving sun but adds more marks of decay. My withered trunk shall never clothe itself with a smoother rind; nor my hoary locks be readorned with the auburn gloss of youth; nor will a more vigorous sap circulate through my nearly collapsed vessels! The plant is annually renovated, while the lord of the earth, with all his towering faculties, withers and sinks down to an everlasting sleep!—But this is judging by sense and sight alone.—

> Believe the muse: the wintry blast of death
> Kills not the buds of virtue; no, they spread,
> Beneath the heavenly beam of brighter suns,
> Thro' endless ages, into higher powers.

"The attempt to describe by words, that which in truth, requires the faithful pencil of the first of painters, may well be deemed a futile effort. Who would attempt to describe by words "*the gay carnation.*" The most eminent in the Belgian school of painters, may throw his pencil by in despair of imitating even the *violet* or *apple-blossom;* for "*who can paint like nature?*" what colours on the painter's pallet can express the richness of the *amaryllis formosissima;* or the *superbia gloriosa;* or the *dodecatheon* of Linnæus? Who could hope to succeed in the description of the *strelitzia regina*, adorned as it is, "with purple, azure, and specked with gold?" or the *Ixora coccinea*, the cluster of whose flowers are so brilliant that they resemble burning coals. The splendid *hæmanthus;* the red and blue *echium orientale;* the elegant *pancratium*, with its long and slender filaments; or the *lilio narcissus africanus*, whose petals are white as snow, with streaks of crimson: These, as well as the gorgeous *musa*, equally defy the power of paint, and the art of the pencil.

"If the painter can give but a faint picture of the violet, or the passion-flower, or the chalcedonian lily, what would he say, if requested to express with his colours some of the family of the *Cactus?* particularly the *Cactus grandiflorus*, or NIGHT-BLOWING CEREUS. This stately flower is found in different parts of South America, and in some of the West-

India Islands. It expands a most beautiful corolla of nearly a foot in diameter: it has twenty stamina surrounding one pistillum. The inside of the calyx is a splendid yellow, or bright sulphur colour; the petals of the purest white: but viewing it in front, so as to look into its deep bell, whence issues its long trembling stamina, baffles all description; for in one shade, it is of an aurora colour; viewed in another, it resembles the blaze of burning nitre; and as the eye plays over it, we think we see, at times, a bright reddish purple.

"We may remark generally, that the most splendid flowers are of shortest duration: thus this grand flower expands its beautiful corol, and diffuses a most fragrant odour, for a few hours in the night, then closes to expand no more. It commonly opens about seven or eight o'clock in the evening, usually in July in its native place; but later in England, and in this country; by two in the morning it begins to *wilt*, and soon after to fade, droop, and wither; and before sun-rise it hangs down in a state of irrecoverable collapse and decay; and the next day, this short-lived *belle* resembles a soaked half grown ear of Indian corn. The first time the Botanist gazed at this transitory beauty, in the garden of *Fothergill*, and saw its sudden change, it was with sensations he never can forget. He confesses that in the vast assemblage of flowers that adorn the earth, this flaunting beauty caught his eye, and excited strongly his youthful admiration."

The concluding essay on the principle of vitality, is a discourse that was delivered in the first church at Boston, on the 8th of June, 1790, before the Humane Society of the commonwealth of Massachusetts. They who feel a desire to learn the origin of this charitable institution, and to trace the learned and benevolent efforts of Dr. W. to further the philanthropic object of its members, will best derive the information they seek, from a perusal of the original; and to that we refer them.

Observations on Magical Practices, by Dr. Aaron C. Willey, *of Block island, addressed to the Editors.*

Gentlemen,

I was highly pleased with the manner, in which you reviewed the Rev. Dr. Quitman's treatise on Magic, in your publication, Hex. iii. vol. ii. p. 183. I regret that I have not yet had an opportunity of reading the production of which you speak in such favourable terms. I think, however, that the Author has chosen an excellent subject for the employment of his pen; a subject which opens a fine field for learned and ingenious inquiry. To detect and expose the delusions of necromancy, is an object well worthy the exertions of active genius. I am, therefore, happy to find that a literary character of our own country has made the attempt, and sincerely hope that his labours will be crowned with ample success.

It is truly surprising to see what an ascendancy these absurd and superstitious notions have gained over the human mind. They seem to have prevailed, in a greater or less degree, in all ages, and among all nations. They had their origin in the early stages of society, while the mental faculties were shrouded in clouds and darkness. As modern science began to dispel these unfriendly shades, their empire became considerably shaken. But in no country has knowledge become sufficiently diffused to wholly eradicate these long established errors.

Although the present is an age of intellectual light, and prejudices are daily vanishing before the bright illuminations of truth, yet these irrational and preposterous opinions are still found to predominate over the minds of a numerous class of honest, but credulous and unlettered citizens. Indeed, they are sometimes cherished by those who have just pretensions to information above mediocrity. They were taught in the nursery, and retain their dominion by the force of early impressions, and the sinister arts of designing characters. So deeply rooted are these ideas, that to exterminate them requires the combined energies of rhetoric and logic. Perhaps the shafts of ridicule might occasionally be pointed with fortunate effect. But the re-

moval of these inconsistent and unphilosophical tenets is, too often, a task of insurmountable difficulty.

The reality of witches is, by many, as firmly believed as the existence of a Supreme Being. Instances of this you have mentioned. Numerous others might be adduced. Scarcely a town is to be found but what, at one time or other, has been annoyed by a diabolical hag. In general, accusation rests upon some ignorant, shrivelled up old woman, with whom the devil would be ashamed of having any connexion; and her accusers are commonly those whose intellectual powers have been but sparingly evolved.

There are men, now and then to be met with in New-England, who profess a familiarity with magic. By the aid of this, they pretend to perform wonders; as raising and laying infernal spirits; disclosing the future events of a person's life; discovering of thieves, robbers, runaways, and lost property, with many others of a like nature. I had an opportunity, a few years since, of being acquainted with one of these conjurers. He lived at Plainfield, in Connecticut. His fame was great among the illiterate and credulous. Numbers of both sexes resorted to him to obtain the assistance of his "so potent art," The profits of his craft were considerable. One of his means of delusion was *Chiromancy*, or inspection of the lines and lineaments of the hand. In this he sometimes affected as much erudition as the facetious *Joseph Haines*, when, on the margin of Styx, he unluckily mistook Charon for a man who was desirous of having "his fortune told."* Another method of practising imposture, was by writing mysterious characters, and pronouncing uncouth and unintelligible words. He would even persuade the gaping vulgar, that he was in possession of books, by the reading of which he could command invisible beings, and imprison demons within the "knotted oak."

Fortune-telling is a species of delusion which very much prevails among the lower orders of society. It derives its influence from an unrestrained credulity, united with that natural propensity in man to pry into the events of futurity. Fortune-tellers, as far as I have observed, are never found

* Vide *Brown's* Letters from the Dead to the Living.

among people of much intelligence. They are chiefly confined to that class, whose misfortune it has been to have grown into life, unassisted by that

> Delightful task which rears the tender thought,
> Teaches the young ideas how to shoot,
> —Pours fresh instruction o'er the mind
> And breathes the enlivening spirit.

For the most part, those who seek to learn what fate has wrapped up for them in the womb of time, are such as form opinions, without due examination, or who have never cast their early imbibed prejudices at the foot of the altar of rationality.

This fallacious art actually destroys the tranquillity of many; besides often fetching the last penny from the purse of indigence. I have seen the cheerful merriment of youth turned into sadness, and the roseate bloom forsake the cheek of beauty, at the unfavourable report of a reputed fortune-teller. I have known fears and anxieties excited which I endeavoured, in vain, to reason or laugh away. The legislature of New-York has acted wisely in making this a subject of prohibition by "special statute." It has set a worthy example—an example which ought to be imitated by every State in the Union.

Besides these, there are several kinds of errors and delusions which more nearly concern the profession in which we are engaged. There are few practitioners of medicine, I believe, who have not met with more or less of them. I shall notice such as have particularly fallen under my own observation.

1. *Amulets*, or certain external medicaments worn round the neck, or on some other part of the body. These were employed in early ages. They were usually composed of simple materials, which produced their effect by virtue, either of their own nature, by being wrought into a particular shape, or by being inscribed with quaint words and mystical characters. Some of these are noticed by eminent writers. Among which are those small amber vessels mentioned by Pliny, and hung round the necks of children;

the *bulla*,* the *abraxas*,† and various kinds of precious stones. In more modern times we find many of them celebrated for their imaginary efficacy. Such as quills filled with arsenic or argentum vivum, and worn next the skin, in order to preserve the system against the impression of febrile contagions; a spider enclosed in a nut, against the phthisis; jet, against the calculus vesicæ; a dead man's tooth, against the odontalgia, with a host of others equally whimsical and ridiculous. I have frequently seen the bloodstone worn as a *heriapton* against the epistaxis. Brass rings worn on the fingers, and tow strings engirding the waist, are, with many sovereign preventatives for the rheumatism.

2. *Seventh Sons* have long been renowned for their possession of salutary powers. Their bare touch is supposed sufficient to resolve the inveterate tumour, heal the vicious ulcer, and incarnate the yawning wound. There are instances in which more applications are made to them, for the cure of local complaints, than to the regular bred physician.—I have attended at the birth of the Seventh Son *of a Seventh Son*. His celebrity is now great, although, as yet, but a lisping child. He has been carried a considerable distance to have his hand laid upon an affected part. Indeed, the expectations of many "on tiptoe stand," as naturally concluding that he must inherit a double portion of his father's "health-restoring" faculty.

3. Nearly allied to these are certain persons who believe, or feign themselves endued with power to allay various kinds of diseased commotion by the laying on of hands, and pronouncing a set of caballistical words. They give their process the appellation of *Charming*. One of this order, an

* "A golden ornament, of a globular figure, and hollow within, wherein was contained some amulet, to serve as a preservative from witchcraft and envy, hung about the neck by those who triumphed among the Romans; and also by the children of the patricians, and even ingenui, as a badge of their hereditary nobility and freedom, by which they might be animated to behave themselves worthy of their birth."—"It seems to have been considered as a preservative from dangers and diseases, and even a means of acquiring glory, and other advantages!"

† This was a species of graven gem, usually inscribed with the word *Abraxas*, and worn by the Gnostics, Basilidians, and Carpocratians, as an amulet against diseases and evil spirits. *Abraxas* was the name of the supreme God, as supposed to contain the powers of 365 dependent deities.

antiquated female, resides in this place. She has performed miracles with the more ignorant part of the community. Calling, not long since, to see a patient, who was affected with œdematous swellings of the lower extremeties, I found her engaged in mitigating the malady by her incantatory process. She was pressing the diseased part between her hands, and whispering her spell with as much seeming devotion, as some pious vestal at her orisons. I accosted her, but the "charm was working apace," and was not to be interrupted. I stood to contemplate the scene before me. It was a subject fit for the pencil of some humorous painter. The united talents of Hogarth and Le Brun would have been required to do it justice.

4. Another branch of these absurdities is derived from *judicial astrology*. In all the almanacks I have met with, is a column appropriated to showing what part of the animal frame is under the government of the moon on each day in the year. This, by some people, is consulted more than any other portion of the calendar. They seem to pay it a kind of religious veneration. They will in no wise consent to let blood, and do a number of other necessary acts, without consulting this index. The sign, as it is termed, must be in a particular place. Let the case be ever so urgent, this alone must point out the precise time when phlebotomy is permissible. The almanack in New-York, is not the only one to which is prefixed "the figure of the human body as influenced by the twelve signs of the zodiac." Boston, distinguished for science and polite learning, can boast of a like species of nonsense. Cato said it was surprising how one soothsayer could look another in the face without laughing, and it is equally surprising to me how our almanack-makers can meet each other without discomposing the gravity of their risible muscles.

5. The reality of *philtres* has, with many, long formed an article of belief. Van Helmont laboured hard to establish their existence, and explain their *modus operandi*. But notwithstanding his ingenuity, more modern philosophers are so sceptical as to consider them mere chimeras and idle tales. This notion, however, still predominates among the less informed part of society. In several instances, I have been applied to by the hapless swain, who mourned the pangs of unrequited passion, to assist him with *love-powder*, in gaining the object of his tender affections.

6. Some old Authors inform us, that if the Asarabacca *(Asarum europæum)* be pulled from the ground backward its leaves will operate as a puke, but if forward they become purgative. A similar superstitious observance occurs at the present day, respecting some of our indigenous vegetables. The *Eupatorium Perfoliatum*, for instance, is thought to be emetic if the leaves be stripped from the stalk upwards, but cathartic if they be stripped downwards.

These, are some of the preposterous notions, prevalent among the untaught portion of mankind, concerning diseases and remedial powers. Although, in many instances, they are entirely harmless, yet they are sometimes productive of serious consequences. Besides interfering with the regular administration of the physician, they often prevent a seasonable application to medical aid. In numerous cases a timely recourse to proper help might, but for these, check the progress of the malady and prolong the life of an industrious citizen. But while the simple and deluded patient is vainly employing these imaginary means to relieve his miseries, the complaint advances with rapid strides, till it becomes incurable, or the vital functions are suddenly arrested forever.

AARON C. WILLEY.

MEDICAL AND PHILOSOPHICAL INTELLIGENCE.

DOMESTIC.

A Description of some curious works of art, lately discovered in the State of Ohio. In a letter from MR. JAMES FOSTER, *to* DR. MITCHILL, *dated Aubeville, February 27th*, 1812.

IT has long been my wish to obtain information relative to the antiquities with which this state abounds, and although I am situated in the midst of them, my ignorance of the most probable historical sources from whence to draw concurrent testimony, has baffled every attempt I have made, to acquire a knowledge of the people who have evidently been our precursors in the arts of civilization.

That the race of men, who reared these ancient works, were a race of giants, will not be disputed by any person who has seen their bones.

I have seen skeletons from 8 to 10 feet high; some so corroded, that a short exposure to the air would turn them into dust. Others again that would brave exposure, except the joints, for a considerable time: but I have not known of any complete skeleton that has been preserved.

As you are anxious to gather information on these subjects, I take the liberty of soliciting from you, answers to the following queries:

1st. Bones which have long lain in the earth, are subject to moulder when exposed to the air. Do you know of any method to prevent the air from having this effect?

2nd. Were the people who built these monuments, originally from another quarter of the globe?

It is my intention, if possible, to collect the bones of one of these large beings of other times, and to send them to some person who is capable of throwing light on the darkest page of American history, and I know of none more so

than yourself. I Intend also to collect a quantity of curiosities; such as earthenware, cinders, charcoal, recrements of metals, and such other remains of antiquity, as I may discover in my examination of mounds, forts, furnaces, &c.

I have the honour to be, &c.

JAMES FOSTER.

Information from R. D. RICHARDSON, *Esq. of Circleville, dated March* 22, 1812.

DURING my residence in Ohio, I have seen many articles of antiquity that have excited my curiosity, but as I have not been so particular as to keep regular memorandums of them, I shall therefore give you from memory and recent observation, a description of such as I am acquainted with.

A mound in Montgomery county was opened, in which a singular kind of *vault* was discovered, in the form of a sugar loaf, coming to a flat arch at the top. In this vault was found, a large quantity of human bones.—The armbones measure from the shoulder to the wrist, about three feet in length. Burnt bricks were also found about the size of our tile, or two bricks laid together. The bowl of a stone pipe, pretty neatly finished, was also found. The stones of which this vault was built, must have been brought from a considerable distance, as there are none on the adjacent land. On the top of the mound was a beach tree, three feet in diameter.

In Franklin county, five miles west of the town of Washington, adjoining Lee's place, a stone was found, which was evidently used for a hearth-stone, and is now applied to that purpose, in the state in which it was found, by Mr. William Miller, living on the spot from which it was taken. In the field of this Mr. Miller, there are very strong indications of an old town. There are remaining evidences of houses, while the soil evinces that the spot has heretofore been the fixed residence of an ancient people, more remote and civilized than the present race of Indians. In this place a large number of bones were discovered within a small mound, composed of flat stones, particularly one scull

was taken up nearly whole, and so very large as to cover the face of the largest person who was present at the discovery.

It is necessary to remark, that in the joint of the neck-bone, behind the head, the point of a stone arrow was found sticking, which had probably occasioned the death of the person, in whose skeleton it was found.

The fort, from which this town derives its name, is perhaps the most conspicuous in the country. There are two circles divided by a ditch, which is from fifteen to twenty feet deep. The inner one is composed of a strong yellow clay, and has the appearance of having once been brick. The outer one is made of gravel. The square fort which joins the circular one at the eastern side, has eight gate-ways or passes, one of which opens into the circular fort. At each entrance of the square fort is a mound.

I design soon to give some sketches, more perfect than I can now do, on this important subject, which you will receive through the medium of the *Fredonian.*

Antiquities in Ohio; by the Hon. W. CAMPBELL *of Ohio.*

THE western hemisphere has long afforded matter of curious and interesting animadversion for the traveller, the chymist, the theologian, and the naturalist.

While the south opened its coffers and poured forth its treasures to the avaricious, the north spread a wide field of philosophical speculation before the curious. Industry and curiosity daily find new sources of employment or gratification. Nature has been lavish in her bounties. But while the physical mysteries of the new world are by most persons, made the subjects of research, it is not just that we should pass unnoticed, the evidences of the art and skill of which the aborigines were possessed, and of which we have many instances. In the western part of the Union, and particularly in the states of Ohio and Kentucky, instances of the art of fortification almost every where present themselves. They are but the vestiges of what once must have been strong and secure places of defence or retreat. They have manifestly been calculated for no other than military purposes. Some have doubted it; but investigation de-

monstrates the truth of the assertion. The few, who once doubted, have abandoned the theories by which they pretended to explain the origin and use of these works, which could have answered no agricultural designs; whose dimensions are not sufficiently extensive for the use of a whole tribe; and in many, perhaps most instances in the level country, too extensive for the use of an individual, especially where every individual relied upon the chace for a sustenance. The forms, the lines, the situations, the sepulchral monuments, the redoubts, the exterior and interior moats, about the walls of these fortifications, are the strongest evidence that they were the works of warlike people; that they were strong; and as completely equal to the defence of their respective proprietors, as the fortifications of the Europeans; proportioning the different means of defence and attack of the parties.

These fortifications are of a date so ancient, that we can now derive from the aborigines no intelligence of their origin, or the particular uses to which they were devoted. No tradition has brought us any part of their history. They have been too common for historical notice. Conjecture and the intrinsic evidence which we find in the works themselves, afford us all the explanation which the curious will be able to acquire, and which we could wish that tradition had supplied. In most instances, the walls, which were high, have mouldered almost to the level of the horizon; and the moats, which were deep, have been almost filled. Upon the walls, and in the moats, trees stand as thickly as they do any where about them, and might challenge any of the neighbouring trees to a comparison of age. Here, too, the fallen timber bears as many marks of antiquity as that throughout the forests.

A fortification of peculiar character is found on Paint creek, about eight miles from Chillicothe. It is stationed on the summit of a very high hill. Its walls are of stone, which must have been transported thither from some distance. Although this fortification has been immensely strong, yet it does not appear to have been designed so much for defence in war, as security for certain workshops. This conjecture is predicated upon the facts, that cinder of metal is found there in large quantities: that, deep in the midst of a heap of it, is discovered a large flue; and that the position of the works is not calculated for sallies and at-

tack on an enemy. The wall is intersected in many places by fissures, which, no doubt, were covered ways. The plan comprehends an area of perhaps two hundred and fifty acres in extent. Within this area are several places, which appear to have been wells. Wells the inhabitants must have had; for there is no water on the surface of the earth, near enough to have precluded the necessity of them. This is the only stone wall which has been discovered.—The discovery of cinder leads us to conclusions highly favourable to the civilization of the founders of this work. The use of iron has always been considered as strong testimony of no small progress in the arts of civilized life. Whether this cinder be of iron, or of any other metal, the conclusion is equally favourable to the artists. That it was of iron, at least in part, there is good reason to believe. About three or four miles southwardly, is discovered a place where these artists probably procured their ore. It appears to have been dug out from between two perpendicular and parallel rocks, standing at no great distance apart. The pit was filled up to the surface of the rocks until lately, when it was opened. In opening it, and in the progress of the miners downwards, they have discovered on the rocks, evident marks of the tools which had been used. From the shape of those marks, the conclusion is natural, that the instrument was similar to our mattocks or chisels. The tools, therefore, were most probably of iron, and the ore worked at this fortification, ferruginous. The miners, in their descent, which is not yet deep, have found some thin lamina of metal, clinging to the surface of the rocks; but of its quality, no experiment has been made.

Another of these old fortifications, in a strong and commanding position, in the neighbourhood of a fertile and beautiful country, overlooking the river, and calculated to afford great security of defence, or opportunity of sally upon the circumjacent country, is situated on the east bank of the Little Miami, about thirty-five miles northeast from Cincinnati. It has been surveyed; the courses, distances, and contents, have been delineated, and a transcript is herewith forwarded. It stands on a plain, which is nearly horizontal, about two hundred and thirty-six feet above the level of the river, and between two small streams with steep deep banks. The plain extends about half a mile along the state road, from Lebanon to Chillicothe, nearly level. The

fortification, on all sides, except on the northeast corner, is surrounded by precipices, with the direction of which the lines of the walls correspond. The wall varies in height, agreeably to the shape of the ground on the outside, being generally from eight to ten, and on the plain about nineteen feet and a half high, within and without, and on a base of four poles and a half. On the exterior there is a deep ditch. In a number of places, the walls seem to have been forced, by bodies of water, collected and confined within them. About twenty poles from the eastern gate, through which the road passes, are two mounds, ten feet eight inches high. From these, two canals are led, one northwardly, the other southwardly, which appear to have been intended as a connection of the two branches. Northeast from the two mounds, are two roads or paths nearly parallel, one pole apart, elevated three feet above the common level, and ending to the eastward in an irregular, but somewhat circular figure, about a third mound.—The whole bearing a resemblance to the shape of a gun. This has been generally supposed to have been a race-ground; but most probably was the place where the savages made their prisoners run the gantlet. At the south-west end of the fortification are three elliptical roads about forty poles in length, cut out of the precipice between the wall and river, and commanding the river below. The walls are made of earth and intersected by many gateways. Within them are many appearances of basons or old wells, several feet deep. The plat contains about a hundred acres of land.

Abstract of the late Bishop MADISON'S *memoir on Elephantine bones, discovered in Virginia, during* 1811.

BONES, apparently belonging to a species of elephant, were discovered during the summer of 1811, on the banks of York River in Virginia, about six miles east of Williamsburgh, and about 150 yards from the mansion of Garvin Corbin, Esq.

The parts of this fossil skeleton consist of the ossa innominata; a femur or thigh- bone; two vertebræ, or joints of the back; two ribs, almost entire; the two tusks in tolerable preservation; and seven teeth, all of them grinders, and

four of them fixed in their sockets, which seem to be part of the lower jaw.

These animal remains are of a large size; as may be judged from the dimensions of the pelvis, being 17½ inches from the sacrum to the pubis, and 16½ inches from side to side: the femur is almost three feet long, nearly 17 inches in circumference, and weighs after being well dried, 43½ pounds. The vertebræ are proportionally large. One of the ribs weighs 1½ pounds; and the other 5¼ pounds. One of the tusks measured 3 feet and an inch in length, on its convex side; and at its root, two feet round. According to the best estimate, it must, when entire, have been 5 feet and 6 or 7 inches long. The weight of the largest teeth is 7¼ pounds: that of the smaller, between 3 and 4 pounds; that of two which are not yet separated from their sockets in the jaw-bone, is 16 pounds.

Hence it has been concluded that this skeleton belonged to a species of *Elephant*.

The whole strata in which the bones rest, are alluvial. They lie upon marsh mud, or are sunk a few feet beneath it, surrounded by roots of cypress trees, penetrating below the earth in which the bones are buried. These roots are evidently the remains of such as had been shot forth from trees growing upon ground, (now removed by the water) formerly of the same level with the summit of the adjacent bank, which is above twenty feet in height.

These discoveries in fossil zoology are of great moment to the geologist. They afford matter for profound reflection. Some of the inferences are, that the animals which formerly animated them, were natives of the regions in which the bones are found; 2nd, That they were destroyed by some sudden inundation, which overwhelmed the land to a certain height; 3d, That the time when they existed in the greatest numbers, was when man's dominion over the earth was limited and small; as on the plains of Chaldea, or the valley of Egypt. And that these half reasoning elephants have disappeared with the spread of human power.

Other remains, though of a smaller form, have since the first discovery been found near the same place.

The late president of William and Mary College, was actually engaged in writing a memoir on this subject, which he intended to have communicated to the American Phi-

losophical Society. It will be highly worthy of being read in connection with the valuable papers of Messrs. Miller and Graham, on the elephantine skeletons found within seventy miles of the city of New-York, and inserted in our vol. 4, p. 211, 213. And to these interesting descriptions we refer our readers.

The information contained in this chapter, was derived from the perusal of the before mentioned manuscript memoir. A copy of it was obligingly sent to Dr. Mitchill by the learned and pious author, a very short time before his death, with a letter containing these sentences, dated at Williamsburg, January 22, 1812. "Labouring as I "have been for some time, and still am, under dropsy, it "has been with difficulty that I have brought the essay on "the fossil bones of York River, to its present imperfect "state. However, I submit it to your perusal, and will thank you for any observations, which your superior information may suggest. When convenient I will beg the favour of you to return the Paper.

"I have been for several days using the digitalis, gradually increasing the doses to twenty five drops, but without any good effect. Mercury is used in conjunction with the fox-glove.

"If, in your extensive observations, any particular mode of treating this disorder which you think most efficacious, has occured, may I ask your friendly communication of it? I would not have made this request, had I less respect than I entertain for your talents and scientific attainments."———I am with the greatest regard, &c.

J. MADISON.

Magnetism.

Answers to the following queries may assist much in solving some important problems in Magnetism, and will greatly oblige a lover of the science.

1st. What angles with the meridian and horizon, are made by the magnetic poles in a natural magnet or loadstone, in its original bed, before it has been moved?

The loadstone is found in many parts of the United States—In Culpepper and Orange counties in Virginia, it

is frequently met with. An accurate examiner who has the loadstone in its native bed before him, may easily solve the question.

2d. What is the difference of weight of iron, a magnet will raise on the surface of the earth, and at any certain elevation above it?

A common artificial magnet will serve for the experiment, at the base and top of a Tower, or the highest accessible elevation of a steeple.

But the experiment made in an aërostatic voyage with a barometer to mark the elevation, would clearly decide the ratio of decrease in magnetic power, receding from the centre of the earth.

Many aerial flights have been made, but in none has the phenomenon inquired for, been noticed.

The aërostatic voyage made from Petersburgh, June 30th 1804, by Messrs. Robertson and Sacharoff, under the sanction of the Imperial Academy, was conducted purely for the advantage of Science. The aeronauts, at an elevation indicated by 22 inches in the mercurial column, noticed their dipping needle deranged, and their compass needle was found to be no longer horizontal, the north end, being elevated near 10 degrees. Yet it appears they were not prepared to determine the degree of magnetic force by a proper experiment, which is so desirable to know.

JOEL ABBOTT.

Washington Geo. 16*th. January* 1812.

Comet.

Munich, Dec. 1.

Royal Observatory. From the late observations made by the director, it appears that the parabolical elements of the comet will give the following results: During the first days of December, the comet will run, daily, a distance of 306, 800 German miles; (of 15 miles to a degree) consequently, will go at the rate of 12,783 an hour, and 3 1-2 miles per second. The distance of the comet from the sun is this day, (1st of December) thirty-four millions of miles, and increases daily 240,000 miles; consequently, 10,000 per hour, and 27-10 miles per second. The comet is, on

the first of December, at the distance of upwards forty-one millions of miles from the earth; that is to say, its distance from us is double to that of the sun in our main distance from that luminary. The progressive distance of the comet from the earth, has a daily increase of 505,000 miles; every hour 21,041, and of each second 5,4-5 miles. The comet will during the month of December run over a space of 7,150,000 miles. Its swiftness has therefore considerably lessened since its nearest approach to the sun: In the month of September it ran over fifteen millions of miles; in the month of October thirteen millions, and in November ten millions. Since the 12th of October, which was the time of its greatest brightness, it has lost five sixths of its light; and taking its greatest as an unit, that unit on the first day of December, will be reduced to 2-200.

Elements of the Orbit of the COMET, *now visible. Calculated by* NATHANIEL BOWDITCH.

The geocentric longitudes and latitudes of the Comet, used in finding the elements of the orbit, were deduced from distances of the Comet from *Arcturus, Lyra* and *Doubé*, observed at Cambridge by Professor FARRAR, and and at Nantucket by the Hon. WALTER FOLGER, jun. By combining the observations of Sept. 6, 9, 12, 15, 18, and 23rd, the elements of the orbit were found by the method of LA PLACE, and corrected by the observations of Sept. 6, 15 and 23rd.

Perihelion distance 1.052. The mean distance of the earth from the sun being 1.

Time of passing the perihelion Sept. 6, 1811, at 18h. Greenwich time.

Place of the perihelion counted on the orbit of the Comet, 2s. 21D.

Longitude of the ascending node, 4s. 18D.

Inclination of the orbit to the ecliptic, 74D.

Motion *retrograde*.

These elements will require some corrections, (perhaps two or three degrees) to be determined when a greater number of observations, on a longer arch of the orbit, shall

be made. The observations made early in September were liable to small error, from the uncertainty of the refraction, the Comet having been observed near to the horizon.

These elements differ from those of all the Comets whose orbits have been calculated; as may be seen by examining the tables of LA LANDE and VINCE, or that in REES's Cyclopædia under the article 'Comet.' This Comet is therefore one that has been unknown to astronomers.

Wishing to estimate nearly the apparent course of the Comet from these elements, I described a circle on a stiff piece of paper to represent the orbit of the earth, and a parabola corresponding to it, for the orbit of the Comet (similar to fig. 267, vol, 3, edit. 3rd, of LA LANDE's Astronomy) and marked on these curves the places of those bodies for each day of the present year. A slit being cut through the circle in the direction of the line of nodes, the parabola was inserted so as to be inclined to the ecliptic by an angle of 74° the point representing the perihelion being above the plane of the ecliptic, so as to make the angle at the sun by the perihelion and node 57°. By this apparatus, the following estimate of the apparent course of the Comet and its distance from the earth were made.

In the month of February 1811, the Comet was near to the eastern part of the constellation Argo. Its motion was then west, inclining to the north. It passed a few degrees to the eastward of the Great Dog, and its direction then became nearly north, being stationary in longitude in the month of May. It passed near to the eastern part of the Lesser Dog, early in June, inclining rather towards the east. On the 16th of July it passed the ascending node in the longitude of about 4 signs 8 degrees, and then moved north-easterly towards the feet of the Great Bear, where it was first seen, after the conjunction with the sun, on the 6th of September. On the 5th of October it was near the right hand of Bootes. It will be at its greatest north latitude about the middle of October, near the right foot of Hercules, after which it will begin to move towards the ecliptic, through the left knee of Hercules, towards the Eagle, the Dolphin, the Water-Bearer, &c. It will be near the Eagle about the first of December, It is to be observed that the apparent positions thus roughly estimated, are liable to an error of two or three degrees. The orbit of the Comet falls without the earth's orbit.

The distances of the Comet from the earth, expressed in parts of the sun's distance from the earth, estimated at 10, were found in February 1811, to be 30; in June, when visible at the Cape of Good Hope and at other places south of the equator, 23; on the 6th of September, 17. About the middle of this month (October) it will be at its least distance, 13; after which it will increase, and in the month of December it will be about as far distant as in June. In the latter part of January and in February, 1812, the distance will be above 30; the latitude of the Comet will then be small; and as it will be nearly in conjunction with the sun, it will probably then be invisible. The least distance of the Comet from the earth is about 120 millions of miles. The least distance of the Comet from the sun, 100 millions of miles.

The tail of the Comet has been observed to be 10 to 12 degrees in length, which would make its real length nearly equal to half the distance of the earth from the sun.

Winter and Spring epidemical disease in New-York.

THE citizens of New-York have been much alarmed during winter, and especially the three last months, by the prevalence of a *new* disease.

That alarm has been kept up by the continuation in some places of the adjoining easterly states, and neighbouring counties, of the more fatal complaint denominated the Spotted Fever, which has been noticed and described in our former numbers. At present we have to deplore the untimely death of many fellow citizens. From observation within our reach, and from inquiry, we find that the disease has been much diversified in its symptoms, by what we conceive to be its invasion at the first, second, or last stage, and even at a final determination in the organs of respiration, stomach, heart, and intestines; thereby causing a sudden death, but always leaving marks of considerable suffusion of blood in many parts of the body.

Were we to attempt a description of that fever, we could not promise a narrative, as satisfactory as the importance of the subject obviously requires in this recent period of its existence, and which we hope, is abating towards its total extinction.

An inflammatory attack, seemingly fixed on the lungs, pleura, or bronchiæ, has generally marked its invasion, and in a small proportion of cases, it ushered in as a catarrh or a sore-throat. In all of them, a continual fever seldom or shortly remitting has invariably taken place.

In the second stage, an unexpected prostration ensues, with vibices or eruptions on the mouth, face, and neck. From physicians we are told that red claret coloured spots, and even gangrenous fœtid sloughs have been frequently met with. The internal and vital functions with those of the nervous system, are greatly disordered. At the close of this stage, or several days before the last, a pause and abatement of malignant symptoms gives way to hope of recovery, when a violent exacerbation of fever with delirium, shortly terminates the struggle by death. In others, it is induced by a gradual, protracted, but equally fatal typhus gravior.

It is to be noticed that the first pleuretic, pneumonic, or other thoracic affections in the first stage, may soon be shifted or relieved; that the flushy aspect of the patient deceives the observer, indicating pyrexia, while the pulse remains compressible, rather languid, the tongue is pale in the edges, black or brown in the middle. Adding to that description, the singularity of a disease which variously begins by the first, second or last stage, completes the outlines and its most striking character.

Experienced physicians in this populous city, differ about its similarity with the Spotted Fever, which is certainly marked by more pernicious and fatal symptoms. Of this many recoveries have been happily effected. The antiphlogistic and depleting method has been evidently fatal, a few cases excepted, which were favoured by more inflammatory action in the beginning.

In the present state of inquiry and perplexity, we regret that no sufficient documents can as yet be collected and compared, to decide both on the nature and treatment of the epidemic. We must mention however, that during the winter and spring of 1799, a fever with a strong resemblance to this, appeared in Connecticut and Rhode Island, and was accurately described by Dr. Joseph Comstock of South Kingston, R. I., who likewise experienced the salutary effect of tonic remedies. He was inclined to believe that "dryness in the atmosphere, accompanied with inclemency of heat or cold, was productive of inflammatory diseas-

es, and humidity in like circumstances, operated the reverse." He consequently attributed the epidemic to frequent snows, thaws and moisture. "We find, said he, by experience, that our climate is subject to sudden and various changes, which materially alter the type (nature) of diseases. *(vide Conn. Gazette, May 20, 1799.)*

We terminate this subject, requesting our readers attention to the description of the catarrhal exanthematous malignant fever by Hoffman, vol. 1, page 154.

"The epidemic malignant catarrhal fevers appear under the form of quotidian remittents, running highest in the night, with serious defluxions, and prostration of the strength, and sometimes attended with an eruption of spots on the skin.

"The face, from the beginning, assumes a morbid aspect; and the patient, three or four days before he takes to his bed, complains usually of weariness, a heavy pain of the body and limbs as if the bones were broken, a languor of strength, want of appetite, slight faintings, cardialgic nausea, headach, and interrupted sleep, with the belly bound. The fever comes on in the evening, preceded by chilness and shivering, and accompanied with such a weakness, that the sick can scarcely keep upright, an increase of the headach, vertigo, and restlessness; in some, an exquisite pain of the back or sides, anxiety of the præcordia, burning heat of the internal parts, dryness of the fauces, a quick, weak, contracted pulse, great difficulty of breathing, and pale-coloured urine without any sediment. In some persons, on the fourth, or about the seventh day, spots break out upon the skin, particularly on the back, breast and arms, sometimes with, sometimes without relief; in some numerous, in others few; generally of a purple colour, sometimes of a pale rose-colour, or livid brown; sometimes broad, sometimes small, most frequently like flea-bites, from which they are readily distinguished by their leaving no red mark in the middle upon being pressed. The disease is now at its height; all the symptoms are exasperated, the patient gets no sleep, and becomes delirious, chill sweats come on, and the pulse is contracted and unequal.

"If to these be joined a starting of the tendons, want of thirst, rumbling in the belly, singultus, inflammation of the fauces from aphthæ, convulsions or syncope, with a coldness of the extremities, and profuse sweats; death is to be

expected. But a copious warm sweat, happening about the seventh, eleventh, or fourteenth day, or a looseness continuing for some days, though attended with a languor of the strength, proves salutary; especially if the pulse grows softer, somewhat less quick, and more equal; if the patient gains spirits, can lie with more ease, and becomes dull of hearing; or if the urine appears turbid, and deposites a sediment; which last is an almost certain presage of recovery.

"These kinds of fevers are generally epidemic, from a long continuance of hot, moist, foggy and close weather; especially in the spring and autumn, and wherever there are great and sudden interchanges of heat and cold, moisture and drought.——"

"The symptoms vary according to the circumstances of the sick. If the impurity be great, and tending to a putredinous dissolution, they are all violent, the spots of a brown or black colour, and the disease fatal. Where the juices are less corrupted, the symptoms prove less vehement, and the spots of a purple or pale rose colour. Where perspiration has been suddenly checked, a coryza, sneezing, violent cough, and defluxions of acrid humours on the fauces and epiglottis, are joined. Sometimes the petechial spots are preceded, accompanied or followed, by miliary eruptions, distinguishable by the itching, heat and roughness of the skin, and their peculiar fetid sour smell. These are sometimes red, and sometimes white; the latter, which are the most dangerous, sometimes rise into pustules of a considerable size, filled with an extremely acrid serum: if this happens in the decline, as about the eleventh or fourteenth day, or later, with great anxiety, restlessness, difficulty of breathing, fainting, and coldness of the extremities, the patient, already much exhausted, generally dies."

Anatomical Preparations.

It will be interesting to the faculty and all medical professors in this part of the world, to know that there is actually in New-York a celebrated Italian artist, disposed to

make in wax, any anatomical preparation that may be devised for private curiosity or instruction.

Joseph Chiappy from Ancona, anatomist and surgeon, who has merited honourable testimonies from learned institutions in Italy and Spain, has also been noticed by Giovanny Tumiaty in the second volume of his Elements of Anatomy, page 105, for his unrivalled skill in wax works of the kind. "*Coll esposto metodo sotto la mia direzione ha scolpito in cera alcuni pezzi anatomici riusciti di tutta perfezione il Signor Giuseppe Chiappi anconitano uomo di uno genio particolare por la scultura e che lavora la cera al segno di gariggiare colla natura.*"

Mr. J. Chiappy has shewn already many admirable specimens of his skill, even the inspection of a Cadaver could not afford as striking conviction to the senses. We have seen two preparations of *Gravidus Uterus* with twins, in their positions and respective membranes in the act of parting, with the view of the placenta as it separates itself!!! Of a fœtus with the state of circulation exposed; a human ear, internal and external meatus, and all the small bones; the whole terminating at the aqueduct Fallopii, and the Eustachian tube, and magnified to 30 times the natural size. In the same preparation, the nerves and muscles are in their true state of connexion, and the labyrinth is represented in five different sections. Thinking it useless to notice other preparations equally interesting, we sincerely wish full employment to the rare talents of Mr. Chiappy, and the most liberal and ample reward to his labour.

FOREIGN.

Extraordinary cure of a person deaf and dumb, from Birth effected by Surgical operation. From the Journal de l'Empire.

PARIS, 30th of Oct. 1811.

A very curious and most interesting report has been presented by Messrs. Portal and Percy, to the first class of the Institute, on the *extraordinary cure* of a person Deaf and Dumb from his birth, and effected by Mr. Itard, Physician of the Institution for the Deaf and Dumb, at Paris. The following are the most essential particulars noticed in the report :—

After having made numberless and unsuccessful experiments, and convinced himself of the illusory benefits attributed to galvanism and electricity, which cannot possibly have any salutary effect, but in cases of paralytic affections of the auditory nerves, Mr. Itard conceived the project of a rational treatment, firmly persuaded that many deafnesses, particularly those from birth, must proceed from a humoral obstruction [or choaking up] of the internal auditory channel. That channel, which from the drum of the ear, extends to the *trompe d'eustache*, is moistened by a limpid serosity, or rather a lymph, of which either the excess, thickening, or absolute absence, is equally injurious to hearing. The discovery of the lymph is ascribed to Doctor Cotunni, of Naples, and is named after him. It is in that sweet and viscid fluid that the open extremity of the auditory nerves is immersed ; it appears that it contributes more essentially to keep that kind of retina of the ear, in a state of docility and sufficient degree of sensibility to the perception of the senses, than to supply those oscillations and those rapid undulations by which they are diversified.

Mr. Itard is well aware that the privation of hearing with the Deaf and Dumb, cannot be, in all cases, the effect

of one single cause, and invariably proceeding from the same. He is also of opinion, that the auditory apparatus may be affected by natural defects, as is often the case with organs of less utility; but every thing contributes to strengthen his belief, that the choaking up of the internal part of the ear, by the consistence, and often times the concretion of the Cotunni Lymph, is one of the most prevailing causes of deafness, which must necessarily produce Dumbness; and from that etiology he naturally concluded, that this conduit might be cleared and cleansed, by means of proper injections.

Such has been the principle adopted by Mr. Itard, in his treatment of Master Dietz, a youth of fifteen, Deaf and Dumb. Suffice it to say, that the perforation of both his ears took place on the 2d of July last; that the first injections, of simply luke-warm water, were first administered on the 6th of the same month; that they first penetrated into the mouth on the 12th; and that young Dietz, who previous thereto, had always appeared to be insensible to the most terrible explosions of artillery, evinced towards the latter end of the same month, at the long ringing of a number of bells in his neighbourhood, signs of emotions which shortly created in him a head-ache, and successively vertigo, or giddiness of head. It was then observed, that he not only heard, but paid particular attention to the ringing of the door-bell; and that but a short time after, namely, towards the 5th of August, it was discovered that he noticed the sound of a human voice; but, as it may be well imagined, without comprehending any thing.

Finally, no sooner was Dietz made sensible that it was the sound of a human voice that he had heard, than he could not contain his joy—and, to use the words of Mr. Itard, his great blue eyes, until then so languishing and sullen, were animated with the fire of life and health. We have, says he, seen them, in a manner, fastened upon our lips in search of the sound of the voice, and by their sprightliness discovering the deep impression it produced on his soul, eager of the enjoyment hitherto unknown to him.

He himself, extremely anxious to speak, wishes to know the names of all objects most familiar to him, and which he had never before known, but by signs either written or manuel; but those articulated names, whether they dis-

tinctly strike his ears, and particularly his right one, when he attempts to repeat them, he mangles them in the same manner as children when they begin to articulate words, and cannot succeed to catch the pronunciation of words, but those which, formed of several vowels, to be articulated, needs but the motion of the lips; all others, which require the combined movements of the tongue, the glottis, and other organs of the voice, he more or less alters.—Hence, when placed behind him, we have, in a rather low tone of voice, said *ali, ala;* as a faithful echo, he perfectly repeated *ali, ala;* but we have attempted to convey to his heart through his ears, names that gratitude must have so much endeared to him, namely, of his two great benefactors, Sicard, and Itard, these two names were distinctly pronounced to him; but, pointing out to them with every possible emotion of tenderness, he answered *Tica, Ica.*

It is now a fact established beyond contradiction, that Dietz, who was born deaf and dumb, is no longer either one or the other, since the operation first took place about five weeks ago; and that with the sense of hearing, which only requires to be modified by practice, he has gained the faculty of speech which now requires nothing more than proper lessons and exercise, to be unfolded and improved as much as may be practicable at that age; for now, his organs have not the same mobility, nor are they acted upon as when an infant; their indocility now, if we can so express ourselves, will present an obstacle not easily surmounted.

It is to be observed, however, that we have feared of practising too many experiments upon that truly interesting youth; on whom, perhaps, sensations too often repeated and acute, might produce as much evil, as gentle impressions judiciously managed may produce good. Of this we had a most remarkable instance, when the effect of a musical instrument was first tried, (it was an organized cymbal) he was observed, suddenly to tremble, to turn pale on the point of fainting, and then again transported with pleasure, and with a sensation hitherto unknown, the vehemence of which reddened his cheeks, made his eyes sparkle, agitated his pulse, quickened his respiration, and produced a kind of delirium and intoxication.

The commissioners conclude their report, by observing, that the fact of the actual cure of Dietz, as by them affirm-

ed, is well deserving the most serious attention, inasmuch, as it opens to the unfortunate deaf and dumb, and indeed generally to all those who have lost their hearing, a source of hope of the most interesting nature, even should it only be realized upon a small number of those most unfortunate beings. They farther declare that the praiseworthy author of that wonderful and admirable cure, well deserves the highest encomiums of the class, and recommend to grant him the prerogative of being admitted among them, as a token of their high esteem and consideration.

Curative Effects of Digitalis (Fox-glove) in dropsical complaints, in a letter of James Saunders M. D. Of Edinburgh, the Author of a treatise on pulmonary consumption, and of an inquiry on the medical properties of digitalis.

To Sir Henry Halford Bart. M. D.

Sir,

Your elevated station in medicine, invests your opinions with corresponding importance.

In one of your letters relative to the medical treatment of Mr. Fox, your words are, "I do not believe the Digitalis was ever prescribed at all; I remember stating in consultation, when the propriety of administering that remedy was discussed, that I had never seen it do good in the dropsy of the belly, though I had often found it give temporary relief in cases of water in the chest; and I am pretty sure that Drs. Mosely and Pitcain both stated this to be the result of their experience also, and that in consequence it was never prescribed."

If this is correct, it is a valuable discovery; but if incorrect, and Digitalis is really useful in every species of dropsy, the error ought to be perceived before it obtains the sanction of time and prejudice, the great supporters of error; it ought to be perceived, before those affected with dropsy be deterred from using a substance, which might be the only thing that could save them; and before many of our profession, who must often rely on authority, lose their confidence in this remedy.

Medical prescriptions deeply interest the community, and to remove any serious mistakes concerning them, is an

imperious duty, in the discharge of which, one must despise that narrowness of mind which cannot bear contradiction—magnanimity prefers the truth to every private consideration.

To return to the direct question—What reason is there to suppose, that a substance received into the stomach, will remove water from the chest, and not from any other cavity, or part of the body? You will answer, perhaps, that reasoning is here preposterous, the facts must precede the conclusions; on this point we would agree—but what can be alleged, if the facts not only do not support, but are most decisively repugnant to your opinion.

To all the practical writers, who have attended to the medicinal properties of this plant, I appeal for proof, that the preparations of the Digitalis, or Fox-glove, remove water from every part of the body; there are thousands who laboured, one under one species of dropsy, another under another, who owe their lives in a great degree to this medicine. This is not assertion opposed to assertion—I could produce ample evidence, even from my own practice, that it has cured dropsical effusions from the crown of the head to the sole of the foot.

Let us now consider in what dropsical cases we may expect it to give, not temporary relief, but permanent recovery; and in what it will be prescribed without ultimate success.

If there is any watery effusion from simple debility, or exhaustion, while the structure of the parts remains uninjured, then the Digitalis will have the best effects; if, on the contrary, the collection of water is the result of certain morbid changes in the organization of any part essential to life, then the Digitalis, like every other article of the Materia Medica, will fail, whether the water be in the chest, in the abdomen, or in the cellular membrane under the skin. But even in these desperate instances it will relieve, and for a length of time, proportioned to the local injury, and the strength of the patient, it will retard the accumulation of fluid, and the consequent mortality.

Every one has remarked speedy alleviation from its use in water of the chest: this is to be ascribed to the nature and function of the lungs, the removal of a small degree of oppression from them invigorates the whole system. I thought, indeed, that there did not exist a physician who

had not also noticed its great efficacy in ascites, or water in the belly.

Cases might be readily produced, in which Digitalis had assisted in curing dropsy of the belly from disease of one of the organs there contained; but were the lungs in a similar condition, it would give relief, nothing more.

If for example, water be collected in consequence of obstruction in the liver, the alternate use of mercury and Digitalis will remove both the obstruction and the water, which could not be well accomplished by either, unsupported by the other; but where hydrothorax, or water in the chest, is the consequence of obstructed lungs, in vain should we expect a return of health from the assistance of Digitalis.

Respecting the general administration of this medicine, I may here say, that danger is certainly to be apprehended from its being used either long, or in great doses, but that, within prudent limits, and in the proper cases, its powers are most salutary; that universal experience has confirmed its indispensable utility in all dropsies, as well as its superiority in those not connected with other disorders. With regard to the Digitalis in such cases, there are only two things pernicious, viz. either to give too much, or to give none of it. In short, I maintain, that in every severe dropsy, not to give the Digitalis is withholding one of the most probable means of preservation.

Before we part, be assured, that I did not think of addressing you, till I observed that your dogma had made an extensive impression: and you will see the propriety of confuting it, in a manner equally conspicuous with that in which it was announced. You are medically convinced that an evil must be overcome by following its progress, and obviating its baneful effects.

I have the honour to be your's obediently,

JAMES SAUNDERS, M. D.

Edinburgh, 8th Jan. 1812.

From a London Paper.

Idea of a new anatomy of the Brain, by CHARLES BELL, *F. R. S. E.*

IN a small pamphlet which that celebrated anatomist submits to his friends, he proposes a new theory of the brain, observing "that it is not more presumptuous to fol-"low the tracts of nervous matter in the brain, and to at-"tempt the course of sensation, than it is to trace the rays "of light through the humours of the eye, and to say, that "the retina is the seat of vision."

From an indisputable fact, to wit, that each organ of sense is provided with a capacity of receiving certain changes to be played upon, as it were, yet each is utterly incapable of receiving the impressions destined for another organ of sensation; and also because an impression made on two different nerves or senses, though with the same instrument, will produce two distinct sensations, C. Bell is induced to inquire into the existence of different seats in the brain, of the operations of the mind, and of sensations strictly tracing them by their respective nerves, whether isolated or branched, and bundled out again. Besides, as we are incessantly under the agency of external causes, an intuitive power is formed, resulting from a simultaneous operation of the brain, nerves, and muscles. Hence our author seems to determine upon a three fold function of the brain, which have their respective seats, which we would take the liberty to call *Vitality*, *Instinct*, and *Volition*.

Through the second part of this very condensed exposition, the author adduces striking anatomical facts, and now well ascertained, to prove that the cerebrum and cerebellum are parts distinct in function, since every nerve obtains a double function, which has a double root in the spinal marrow, which is composed of two portions distinctly originating from either.

Not intending here a review, but a simple notice of this curious publication, better to give a more correct idea of the proposed theory, and an opportunity to our readers to judge of its importance, we will simply transcribe two concluding paragraphs.

"The cineritious and superficial parts of the brain, are

the seat of intellectual faculties: for it is found that the surface of the brain is totally insensible; but that the deep and medullary part being wounded, the animal is convulsed and pained.———"

"From the cineritious matter which is chiefly external, and forming the surface of the cerebrum, and from the grand centre of medullary matter of the cerebrum, what are called the *crura*, descend. These are fasciculated processes of the cerebrum, from which go off the nerves of motion, the nerves governing the muscular frame. Through the nerves of the scull, the *sensorium* receives impression, but the will is expressed through the medium of the nerves of motion. The fewest operations of the bodily frame, and the connections which unite the parts of the body into system, are through the cerebellum, and nerves proceeding from it."

OBITUARY.

It has become the painful, though necessary task of the surviving editor, to record the death of his late and invaluable friend Dr. Edward Miller, one of the planners and editors of the Medical Repository, in the fifty-second year of his age. By this event, the medical, the scientific, the literary and the polite world, have lost one of their brightest ornaments. He fell a victim to an inflammatory attack upon the lungs, which after symptoms of convalescence, degenerated into a typhus that progressing through the stages of delirium and prostration, put an end to his valuable life on the 17th day of March, 1812.

Edward Miller was born, at Dover, in Delaware, on the 9th of May 1760. He was the third son of the Rev. John Miller, who was pastor of the presbyterian church at that place, for the term of forty-three years. He received his classical education at an academy in the village of Newark near Wilmington, within that State. This School was then conducted by two excellent clergymen, Doctors Francis Allison, and Alexander M'Dowell; and under their superintendance, had acquired a high reputation particularly, for Roman and Grecian learning. In that Seminary, the Sciences were taught as well as the languages. It was

in reality a College, in every thing but the title; and was preferable, as a place of instruction, to the greater part of the institutions which bear that name.

After laying the foundation of elegant and useful knowledge, under these instructors, he applied himself to the study of physic, at his native place, under the direction of Dr. Charles Ridgely, the father of the gentleman who now represents that State in Congress. He afterwards attended two courses of medical lectures in the University of Pennsylvania, and received his doctor's degree there in 1789. The inaugural dissertation which he composed in the latin tongue, *De Physconia splenica*, on that occasion, and which he published in the form of a pamphlet, is an honourable testimonial of his industry, and at the same time of the proficiency he had made in classical and professional information.

It appears that during the interval between the time that he commenced medical studies, and that of his graduation, he engaged several times in the public service. In 1780 and 1781, he was more than a twelve-month, a surgeon's mate, in the military hospital at Baskingridge in New-Jersey. In 1782, he went to France as surgeon of an armed vessel; and returned in 1783. He soon after entered upon a course of Practice, and for that purpose, fixed himself in Somerset County, Maryland. But shortly after, settled in his native town of Dover, where he continued the labours and functions of his profession until 1796.

In that year he removed to New-York, and in 1797 assisted the ever to be lamented Elihu H. Smith, and the writer of this article in concerting the present periodical publication, as a vehicle of intelligence to the western hemisphere, on medical and scientific subjects. Of this, he lived to see fourteen volumes and an half completed; whereas Dr. Smith had been snatched away before the finishing of the second.

His amiable disposition, cultivated manners, and professional skill brought him rapidly into confidence and employment. And his talents were called into action for the public, as well as for individual benefit. For in 1803, he was appointed resident physician for the city of New-York, under the act for preventing the introduction of infectious and pestilential diseases. The duties of his arduous and hazardous office, he performed with an intrepidity and

skill which were as reputable to himself, as useful to his fellow-citizens. He was about the same time commissioned as one of the physicians of that admirable institution, the New-York Hospital, and in performing the services attached to his station, the numerous objects of that asylum had the benefit of his prescriptions and attendance. On the establishment of the College of Physicians in 1807, the Regents of the University appointed him a trustee; and placed him in the chair of the Practice of Physic. He immediately turned his attention to the important business of his professorship; and became a very instructive and popular lecturer on that important and extensive department of medicine. To these labours, the Senatus Academicus annexed the duties of a Clinical Lecturer in the hospital; and there the students of the New-York school of medicine, enjoyed the advantages of the practical illustrations he gave them, on the more select cases of the patients.

Nor were persons at a distance insensible of his merits. He had been chosen a Fellow of the American Philosophical Society at Philadelphia; and the medical societies throughout the United States had been liberal enough, in many instances, to elect him an honorary, or a corresponding member. And had his life been spared, his name would doubtless have been enrolled on the lists of worth and excellence in many other societies.

For a knowledge of his writings, it might be sufficient to refer to the different volumes of the Medical Repository, towards which he contributed so faithfully, so ably, and so long. There, may be found some of the compositions which exhibit the power he possessed, to observe, to describe and to analyze. But there are some of his performances, which this work does not contain. Such, for example, is his report on the endemic fevers of our cities, which he had seen so often, and examined with such accuracy. His opinion that they are not contagious, is a ponderous authority, that outweighs a multitude of ordinary observations. The extensive circulation of this tract, and the respectful consideration which it has received, are the best evidences of its value.

The last letter received from him evinces the zeal with which he laboured for the advancement of the healing art. It refers to the efficacy of gold in curing lues, as commenced in the New-York Hospital, in October 1811, after the

manner recommended by M. Chrestien of Montpellier. On that subject, Dr. Miller wrote thus, his *novissima verba;* "I was dining some time ago with the Historical Soci-"ety, and happened to sit next to a gentleman who had tra-"velled much in Europe. We talked on mineralogy, and "gold being accidentally mentioned, I stated to him our "very successful use of it as an anti-syphilitic remedy, in the "New-York Hospital, when he inquired the authority on "which it was used, and learned that it was M. Chrestien, "I found this gentleman had known him, particularly in "France, and had witnessed in the case of one of his ac-"quaintance, the efficacy of the peculiar remedy used by "Chrestien, which was then a secret. He informed me "that Chrestien is a man of the most respectable character; "of distinguished professional eminence; physician to Bar-"ras, the ex-director; a man of fortune, and a member of "the best society of Montpellier, the city in which he re-"sides. These circumstances are well calculated to in-"crease our confidence in the experiments and assertions he "has published. And so far as our observations in the hos-"pital go, the remedy is intirely worthy of all the encomi-"um which Chrestien bestows upon it."

Dr. Miller was never married. His only surviving brother is the Rev. Samuel Miller, D. D., Pastor of the first presbyterian church in New-York. That gentleman has lost the best of brothers; the surviving editor, the best of friends; and this work, one of its firmest supports.

Encomiastick Notice on the late Dr. Edward Miller, *by a correspondent.*

Cardinal de Retz, pourtraying the character of the duke de la Rochefoucault, remarked that he was a modest and timid man, always ready to make an apology, if he thought his conduct might be observed and misjudged. He had not faith indeed in the virtue of mankind: But his systematic error in attributing to selfish motives all good and virtuous actions of his fellow-creatures, eminently proved his own purity and severity of principles; in consequence of which, his own friends were sure to escape suspicion, and to ingratiate themselves in his mind, if they could *àpropos* point out to him some of his own imperfections.

By so rare traits of a character not generally well understood, I fear not to designate the much lamented Dr. Edward Miller, whose untimely death has excited an universal and unfeigned regret.—Moral character assimilates men who were born in different ranks, and were organized for very unlike pursuits in life.

Like the duke, our friend was timid and diffident; yet as if he had descended from distinguished or noble ancestors, and was brought up for the highest ranks in society; he could not be excelled in genteel deportment, nor by elegance of manners, to which the happy concurrence of an open countenance and of a pleasing and good figure, added still more personal dignity.

At an early period of his life, the duke renounced the allurements and intrigues of the court to the pride of power, and to all gratifications that are easily obtained by a princely fortune, merely to save time and arrange his moral speculations; by which, says Voltaire, he really taught mankind how to think more, and how to think better than they had done before.

To so great a sacrifice in point of wealth and influence, which alone his country could afford for any aspiring men, Dr. Miller had also submitted, better to devote himself to scientific acquirements, to improve his moral habits, and faithfully to discharge his professional avocations.—It is well known that he had it in his power to accumulate an extensive fortune, had he been more selfish, had he wished to combine the care of his fame with the common and restless ambition of profit and wealth.

Many witnesses have already made it known, that when Dr. Miller was urged to fix a remuneration for past and long services, he overlooked or forgot the extent of his just claim, and peremptorily reduced it to the smallest or least expected proportion. Thus during 16 years of practice among the first ranks of a populous and opulent city, he had time to share the completion of fifteen volumes of the Medical Repository; to discharge during nine years, the dangerous and sometimes pressing duties of a public office; to deliver, during three of four seasons, regular courses of medical lectures; incessantly to direct the instruction of distinguished medical pupils; to correspond with many of the most eminent writers, or learned men of

different parts of the world: but he had no time to accumulate a large fortune!!

In politics, Dr. Miller, like one of the best citizens in the republic of Plato, had taken a stand in which he remained unchangeable, when fluctuation of opinion might thin the ranks of party; but as he never was guided by interest nor self promotion, he never assumed the merit of personal influence, neither would he court the favours of powerful leaders who distribute them.

His private life evinced a disposition to mistrust the sincerity of friendship, and to regard with diffidence the blandishments of domestic and connubial affections, among which it is remarkable, that having already overreached the prime of age, he had not yet sought comfort and relief for his weary days; he who had the best opportunities, and so much claim to the fair gifts of fortune and beauty. His numerous social connexions were seldom marked by intimacy and familiarity, except with his relations.—When such a plan of conduct is systematically adopted by a man of elevated mind and irreproachable manners, it might be said that it proceeds, like in la Rochefoucault, from an absolute disbelief of genuine virtue in his fellow-creatures. On this view of his character, the parallel cannot be continued; for the pride of the one was no doubt too much elated by the advantages of birth, fortune, and natural endowments, while the pride of the other, corrected in the usual walks of life, was established only upon self-acquired virtue and merit. It is rare to observe a more scrupulous attention in reciprocating marks of civility, etiquette and friendship, and of an unbounded disposition to oblige, than that which Dr. Miller was wont and happy to exercise. A call upon him from confidence or sufferings, was more powerful than that of interest; for it, he would interrupt his rest, and renounce the comforts of leisure. That amicable and generous readiness was extended, not only to all the circle of his own practice, but to that of many honest physicians, whose responsibility in despaired or difficult cases, he would cheerfully divide without pride, and what is more—without fee!

Hence it is, that thousands silently followed his body to the grave who had been his friends, who had received his disinterested services, who had experienced his condescen-

sion and kindness, who had admired his talents, who had enjoyed of his instructive conversation; but whom he had never caressed——!

His habitual reserve, after all, was neither a studious or suspicious fear of committing himself; for amidst his various and pressing occupations, he could, at regular hours, receive and entertain his visitors, answer to correspondents, impart to all scientific news, medical facts, casual observations, as if he would treasure up nothing for himself exclusively. But with the habit of circumspection Dr Miller was never seen to offend any body by levity of humour, by affected indifference, nor by punctilious self-importance; it was in him therefore, the consummate wisdom of a man prone to good, and active in all duties of his profession and humanity: it was like a protecting shield against the collisions of intrigue and the reaction of vice, or of other human imperfections, which envy, duplicity and even hypocrisy may disguise, and to which a man of extensive responsibility is incessantly exposed.

Let another trait be added to the inflexible integrity of the gentleman, of the philosopher, and of the preceptor of Medical ethics. Dr. Miller did not appear to be acquainted in society with any subject fit for calumny, scandal and disrespectful censure: among his friends or acquaintances, there was none who could suggest to him a humorous sarcasm; among his fellow practitioners, he would not undervalue the most obscure, on account of inferiority of rank or talents; and to his most severe opponents in medical doctrine, he never levelled the shafts of resentment or contempt. Such merit fully amounts to that of La Rochefoucault, who befriended any man who could make him aware of his own imperfections!!

Panegyrist writers have seldom omitted to expatiate on the unaffected simplicity of their renowned sages, on their methodical dispensation of time for occupation and leisure, on personal decorum and neatness, which are harmoniously symbolical of serenity of mind, and purity of conscience. All these, and many other attributes we might inscribe on the monument of our departed friend.—Let us remark only that by professional and social avocations, Dr. Miller was placed in the first ranks of society, where he had stepped in, without the help of a superior style of living, nor by exchanging favours of etiquette or of fashion-

able entertainments. He continued to live as he first began, in a modest domestic establishment, with moveables rather encumbered with books, than with ornaments.

His constant, numerous and fatiguing occupations with incessant exposure to our variable and keen atmosphere, had of late years induced upon him a chronic catarrhal affection, which he flattered himself to have removed, when on the 17th of March, he fell a victim to the *epidemic catarrhal malignant fever* which was prevailing in New-York, and on that day, died a man who shall ever be remembered as a promoter of medical science, a model of rare talents and virtues, as the pride of his country, and an honour to mankind.

An Oration on the death of the late Dr. Miller, agreeably to public notice, was delivered on Thursday the 9th of April last, in the old City Hall, at the request of the Medical Institution, by Professor Watts of the same, in presence of a numerous and select assemblage of all professions and citizens. The orator honourably acquitted himself, by an affecting narrative of the circumstances of life of the deceased, and by an eloquent display of his talents and virtue. The solemnity of the occasion was much heightened by the mournful sympathy of a respectable and attentive audience.

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